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Administration  
Federal Highway  
Administration

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DOT-VNTSC-FTA-02-06

# Advanced Public Transportation Systems Deployment in the United States

## Year 2000 Update

Final Report  
May 2002



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This report documents work performed under the Federal Transit Administration's Advanced Public Transportation Systems (APTS) Program, a program structured to undertake research and development of innovative applications of advanced navigation, information, and communication technologies that most benefit public transportation.

This report is a compilation of existing and planned deployments of APTS technologies and services. The information was collected during the Summer and Fall of 2000 and was obtained through contacts with persons at each transit agency. A total of 576 agencies were surveyed for this study. Only those agencies with existing or planned APTS systems are included in this report.

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# **Advanced Public Transportation Systems Deployment in the United States**

## **Year 2000 Update**

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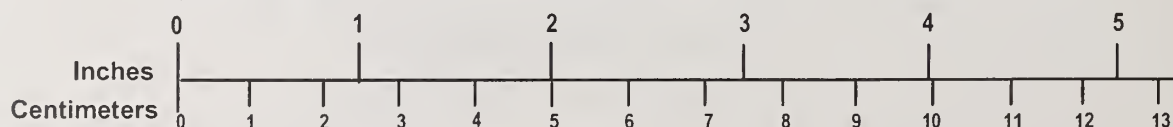
## ENGLISH TO METRIC

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| <b>LENGTH (APPROXIMATE)</b><br>1 inch (in) = 2.5 centimeters (cm)<br>1 foot (ft) = 30 centimeters (cm)<br>1 yard (yd) = 0.9 meter (m)<br>1 mile (mi) = 1.6 kilometers (km)   |
| <b>AREA (APPROXIMATE)</b><br>1 square inch (sq in, in <sup>2</sup> ) = 6.5 square centimeters (cm <sup>2</sup> )<br>1 square foot (sq ft, ft <sup>2</sup> ) = 0.09 square meter (m <sup>2</sup> )<br>1 square yard (sq yd, yd <sup>2</sup> ) = 0.8 square meter (m <sup>2</sup> )<br>1 square mile (sq mi, mi <sup>2</sup> ) = 2.6 square kilometers (km <sup>2</sup> )<br>1 acre = 0.4 hectare (he) = 4,000 square meters (m <sup>2</sup> )                     |
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| <b>VOLUME (APPROXIMATE)</b><br>1 teaspoon (tsp) = 5 milliliters (ml)<br>1 tablespoon (tbsp) = 15 milliliters (ml)<br>1 fluid ounce (fl oz) = 30 milliliters (ml)<br>1 cup (c) = 0.24 liter (l)<br>1 pint (pt) = 0.47 liter (l)<br>1 quart (qt) = 0.96 liter (l)<br>1 gallon (gal) = 3.8 liters (l)<br>1 cubic foot (cu ft, ft <sup>3</sup> ) = 0.03 cubic meter (m <sup>3</sup> )<br>1 cubic yard (cu yd, yd <sup>3</sup> ) = 0.76 cubic meter (m <sup>3</sup> ) |
| <b>TEMPERATURE (EXACT)</b><br>$[(x-32)(5/9)]^{\circ}\text{F} = y^{\circ}\text{C}$  |

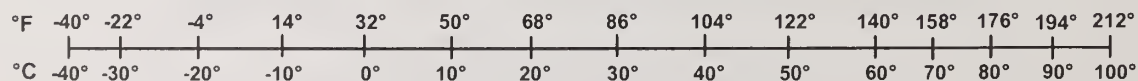
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|---|
| <b>LENGTH (APPROXIMATE)</b><br>1 millimeter (mm) = 0.04 inch (in)<br>1 centimeter (cm) = 0.4 inch (in)<br>1 meter (m) = 3.3 feet (ft)<br>1 meter (m) = 1.1 yards (yd)<br>1 kilometer (km) = 0.6 mile (mi)   |
| <b>AREA (APPROXIMATE)</b><br>1 square centimeter (cm <sup>2</sup> ) = 0.16 square inch (sq in, in <sup>2</sup> )<br>1 square meter (m <sup>2</sup> ) = 1.2 square yards (sq yd, yd <sup>2</sup> )<br>1 square kilometer (km <sup>2</sup> ) = 0.4 square mile (sq mi, mi <sup>2</sup> )<br>10,000 square meters (m <sup>2</sup> ) = 1 hectare (ha) = 2.5 acres |
| <b>MASS - WEIGHT (APPROXIMATE)</b><br>1 gram (gm) = 0.036 ounce (oz)<br>1 kilogram (kg) = 2.2 pounds (lb)<br>1 tonne (t) = 1,000 kilograms (kg) = 1.1 short tons  |
| <b>VOLUME (APPROXIMATE)</b><br>1 milliliter (ml) = 0.03 fluid ounce (fl oz)<br>1 liter (l) = 2.1 pints (pt)<br>1 liter (l) = 1.06 quarts (qt)<br>1 liter (l) = 0.26 gallon (gal)<br>1 cubic meter (m <sup>3</sup> ) = 36 cubic feet (cu ft, ft <sup>3</sup> )<br>1 cubic meter (m <sup>3</sup> ) = 1.3 cubic yards (cu yd, yd <sup>3</sup> )                  |
| <b>TEMPERATURE (EXACT)</b><br>$[(9/5)y + 32]^{\circ}\text{C} = x^{\circ}\text{F}$   |

## QUICK INCH - CENTIMETER LENGTH CONVERSION



## QUICK FAHRENHEIT - CELSIUS TEMPERATURE CONVERSION



## PREFACE

This research was conducted by the Office of System and Economic Assessment at the Volpe National Transportation Systems Center, Research and Special Programs Administration, U.S. Department of Transportation under the sponsorship of the Office of Mobility Innovation, Federal Transit Administration, U.S. Department of Transportation and funded by the Intelligent Transportation Systems Joint Program Office, Federal Highway Administration, U.S. Department of Transportation. This report is the third of a series of biennial reports tracking the existing and planned deployments of Advanced Public Transportation Systems (APTS) technologies and services in the United States.

The information contained in this report was collected by personnel at the Volpe National Transportation Systems Center (Volpe Center) and the Oak Ridge National Laboratory and SAIC during the Fall of 2000. The data contained in the report tables are only as accurate as the information provided, either verbally or written, by the agency contacts and have not been verified by the Volpe Center.

The objective was to reach as many transit agencies as could be identified. A total of 572 agencies provided information for this study. Responding agencies with no existing or planned APTS systems are not listed in the report tables.

Appreciation goes to Melissa Laube and Lawrence Labell of the Volpe Center and Ed Newhall, Jim Lannon, John Mermin, and Anna Kravitz of EG&G Services who collected the Volpe information; to Stephen Gordon of Oak Ridge National Laboratory and Juan Nolteneus and Andrew Dixson of SAIC for supplying the data for the 78 largest U.S. metropolitan areas; and to Sara Secunda of the Volpe Center who compiled the data and produced the tables. Finally, appreciation goes to all the agencies which supplied information for this report.





## TABLE OF CONTENTS

| <u>Section</u>  | <u>Page</u> |
|---|-------------|
| 1. SUMMARY OF APTS DEPLOYMENTS .....  | 1-1         |
| 2. APTS DEPLOYMENT BY TRANSIT AGENCY IN THE UNITED STATES' 78<br>LARGEST METROPOLITAN AREAS .....               | 2-1         |
| 3. APTS DEPLOYMENT BY TRANSIT AGENCY OUTSIDE OF THE 78<br>LARGEST METROPOLITAN AREAS IN THE UNITED STATES ..... | 3-1         |
| APPENDIX A - DEFINITIONS OF TERMS USED .....  | A-1         |
| APPENDIX B - 1995-2000 DEPLOYMENT DATA .....  | B-1         |

## LIST OF FIGURES

| <u>Figure</u>                                 | <u>Page</u> |
|---|-------------|
| 1-1. Advanced Communications Systems .....    | 1-3         |
| 1-2. Automatic Vehicle Location Systems ..... | 1-4         |
| 1-3. Automatic Passenger Counters .....       | 1-6         |
| 1-4. Vehicle Component Monitoring .....       | 1-7         |
| 1-5. Automated Operations Software .....      | 1-8         |
| 1-6. Automated Transit Information .....      | 1-10        |
| 1-7. Automated Fare Payment .....             | 1-12        |
| 1-8. Traffic Signal Priority .....            | 1-14        |

## LIST OF TABLES

| <u>Table</u>  | <u>Page</u> |
|---|-------------|
| 1-1. Advanced Communications .....  | 1-2         |
| 1-2. Percent Change in Advanced Communications .....  | 1-3         |
| 1-3. Automatic Vehicle Location .....   | 1-4         |
| 1-4. Percent Change in Automatic Vehicle Location .....   | 1-4         |
| 1-5. Vehicle Probes .....   | 1-5         |
| 1-6. Automatic Passenger Counters .....   | 1-6         |
| 1-7. Percent Change in Automatic Passenger Counters.....  | 1-6         |
| 1-8. Vehicle Component Monitoring.....  | 1-7         |
| 1-9. Percent Change in Vehicle Component Monitoring .....   | 1-7         |
| 1-10. Automated Operations Software.....  | 1-8         |
| 1-11. Automated Operations Software.....  | 1-9         |
| 1-12. Automated Transit Information .....   | 1-9         |
| 1-13. Percent Change in Automated Transit Information .....   | 1-10        |
| 1-14. Multimodal Traveler Information .....   | 1-11        |
| 1-15. Automated Fare Payment.....   | 1-11        |
| 1-16. Percent Change in Automated Fare Payment .....  | 1-12        |
| 1-17. Multi-Carrier Fare Integration.....   | 1-12        |
| 1-18. Mobility Manager .....  | 1-13        |
| 1-19. Transportation Management Center .....  | 1-13        |
| 1-20. Traffic Signal Priority.....  | 1-14        |
| 1-21. Percent Change in Traffic Signal Priority .....   | 1-14        |
| 1-22. ITS Integration .....   | 1-15        |
| 1-23. Surveillance Cameras.....   | 1-15        |
| 1-24. Silent Alarms .....   | 1-16        |
| 1-25. Covert Microphones.....   | 1-16        |
| 2-1. APTS Deployment by Transit Agency In the United States' 78 Largest<br>Metropolitan Areas.....      | 2-2         |
| 3-1. APTS Deployment by Transit Agency Outside the United States' 78<br>Largest Metropolitan Areas..... | 3-2         |

## LEGEND

| Service Type |                 |
|--------------|-----------------|
| FR           | Fixed Route     |
| DR           | Demand Response |
| LR           | Light Rail      |
| HR           | Heavy Rail      |
| CR           | Commuter Rail   |
| FB           | Ferry Boat      |

| Advanced Communications |               |
|-------------------------|---------------|
| DIG                     | Digital Radio |
| TR                      | Trunked Radio |

| Automated Vehicle Location |                           |
|----------------------------|---------------------------|
| GPS                        | Global Positioning System |
| DK                         | Dead Reckoning            |
| LC                         | Loran C                   |
| SO                         | Signpost/Odometer         |

| Vehicle Probes |              |
|----------------|--------------|
| F              | On Freeways  |
| A              | On Arterials |

| Automated Transit Information |                  |
|-------------------------------|------------------|
| P                             | Pre-Trip         |
| W                             | Terminal/Wayside |
| I                             | In-Vehicle       |

| Automated Fare Payment |                 |
|------------------------|-----------------|
| MS                     | Magnetic Stripe |
| SC                     | Smart Card      |

| General  |                        |
|----------|------------------------|
| U or OTR | Unspecified Technology |

| Status          |             |
|-----------------|-------------|
| Any Letter(s)   | Operational |
| [Any Letter(s)] | Planned     |



## SECTION 1. SUMMARY OF APTS DEPLOYMENTS

Summaries of 17 Advanced Public Transportation System (APTS) element deployments are shown in the tables in this Section. (See Appendix A for definitions of these elements.) The summary tables show the number of responding transit agencies with present and planned (*i.e., expected to be operational by the year 2005*) deployments of APTS elements. The number of service types these agencies operate using APTS systems or technologies are also listed where these data were collected. Table 1-3, for example, reveals that 230 transit agencies operate or are planning to operate 316 service types employing Automatic Vehicle Location. Where applicable (and available), the tables also summarize the deployments by the specific technologies installed. Figures 1-1 through 1-8 show graphically the number of APTS systems deployed or planned to be deployed as revealed in the 1995, 1998, and 2000 surveys. (See Appendix B for the actual number in each of the years.) Other Section 1 tables show the percentage increases between survey periods where these same data were obtained. Only eight APTS elements have data from all three years.

The Section 1 table statistics showing the number of deployments are presented in three columns. The first column contains the Oak Ridge National Laboratory/SAIC (Oak Ridge) collected data on the existing or planned APTS deployments in jurisdictions containing 50,000 persons or more within the 78 largest metropolitan areas of the United States. The second column contains the Volpe National Transportation Systems Center (Volpe) collected data on the existing or planned APTS deployments in the remainder of the United States. The third column contains the sum of the Oak Ridge and Volpe data.

Although 17 APTS elements are covered in this report, totals for the entire U.S. can be presented only for Advanced Communications, Automatic Vehicle Location, Vehicle Probes, Automatic Passenger Counters, Vehicle Component Monitoring, Automated Operations Software, Automated Transit Information, Automated Fare Payment, and Traffic Signal Priority. This is due to the fact that the same data was not ultimately collected by both organizations. Since the initial survey form mailed out by Oak Ridge National Laboratory/SAIC received a low return rate, a second, shorter survey form was sent to the non-responding agencies. While this second effort resulted in virtually a 100 percent response, several questions that would have obtained information on the same APTS elements as in the Volpe survey were not asked. These elements included Multi-Modal Traveler Information, Multi-Carrier Fare Integration, Mobility Manager, Transportation Management Centers, and ITS Integration. The Volpe survey also added Surveillance Camera, Silent Alarm, and Covert Microphone questions after the Oak Ridge survey was finalized. Consequently, deployments of several APTS elements are reported only for areas outside the 78 largest U.S. metropolitan areas.



The operational and planned status numbers in Section 1 tables will sum to the agency total in cases where both operational and planned status information was collected. However, the breakdowns by service type and technology or location usually will not sum to the transit agency total because of the number of agencies with multiple technologies installed (e.g., magnetic stripe *and* smart card fare payment, etc.) or with a technology installed on more than one mode. If an agency is operating an APTS technology but is upgrading to a more advanced technology in the same category (e.g., from signpost to Global Positioning System technology), it is counted as operational only. If an agency is operating a technology in more than one mode, it is counted as one agency, but with multiple service types.

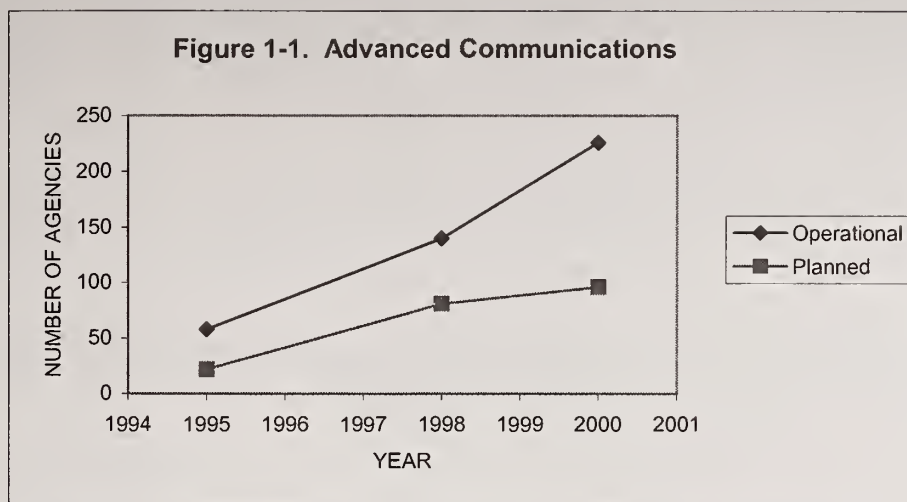
Of the 572 agencies surveyed in 2000, the *most widely deployed* APTS elements for which data were collected for the entire U.S. are Automated Transit Information (291 agencies), Advanced Communications (229 agencies), and Automated Operations Software (177 agencies). The *least widely deployed* APTS elements are Vehicle Component Monitoring (46 agencies), Automatic Passenger Counters (33 agencies), Traffic Signal Priority for transit vehicles (30 agencies), and Vehicle Probes (8 agencies). Automated Fare Payment and Automatic Vehicle Location have been deployed by 98 and 88 agencies respectively. The APTS element with *the greatest number of planned deployments* by 2005 is Automatic Vehicle Location (142 agencies). Summaries by APTS element are as follows.

### **Advanced Communications**

Advanced Communications encompasses digital and trunked radio systems. Table 1-1 shows the Year 2000 deployment survey results.

| Table 1-1. Advanced Communications |                                  |                                   |                        |
|------------------------------------|----------------------------------|-----------------------------------|------------------------|
|                                    | 78 Largest<br>Metropolitan Areas | Remainder of the<br>United States | United States<br>Total |
| <b>Transit Agency Status</b>       |                                  |                                   |                        |
| Operational Systems                | 99                               | 130                               | 229                    |
| Planned Systems                    | 54                               | 40                                | 94                     |
| Agency Totals                      | 153                              | 170                               | 323                    |
| <b>Service Types</b>               |                                  |                                   |                        |
| FR                                 |                                  | 152                               |                        |
| DR                                 |                                  | 129                               |                        |
| LR                                 |                                  | 1                                 |                        |
| HR                                 |                                  | 1                                 |                        |
| CR                                 |                                  | 0                                 |                        |
| FB                                 |                                  | 4                                 |                        |
| Service Type Totals                |                                  | 287                               |                        |
| <b>Technology</b>                  |                                  |                                   |                        |
| Trunked Only                       | 38                               | 36                                | 74                     |
| Digital Only                       | 41                               | 72                                | 113                    |
| Trunked and Digital                | 66                               | 62                                | 128                    |
| Other/Unspecified                  | 8                                | 0                                 | 8                      |

Figure 1-1 and Table 1-2 show the survey to survey period changes in deployments.



| Table 1-2. Percent Change in Advanced Communications |           |           |           |
|--|-----------|-----------|-----------|
|  | 1995-1998 | 1998-2000 | 1995-2000 |
| Operational  | 141%      | 64%       | 295%      |
| Planned  | 268%      | 16%       | 327%      |
| Total  | 176%      | 46%       | 304%      |

Advanced Communications ranked 2<sup>nd</sup> of the 9 APTS elements with available data for the entire U.S. in total number of agencies with operational systems (229) in 2000 and 2<sup>nd</sup> in the total number of agencies with operational plus planned systems (323) according to responses to the Year 2000 survey. Due to the substantial number of Advanced Communications systems already deployed, the percent increase in agencies with operational systems (64%) and operational plus planned systems (46%) ranked only 5<sup>th</sup> and 7<sup>th</sup>, respectively, from 1998 to 2000.

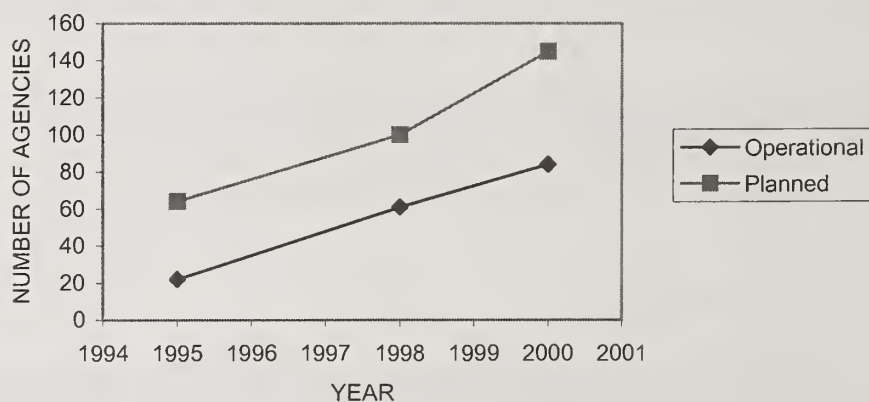
### ***Automatic Vehicle Location***

The most common form of Automatic Vehicle Location (AVL) in use by transit agencies is Global Positioning System (GPS) technology, often with differential correction (DGPS). Although there are still a few older systems with signpost, dead reckoning, or Loran-C location technology, most agencies that had installed these technologies have replaced them with GPS technology. Table 1-3 shows the Year 2000 deployment survey results.

Figure 1-2 and Table 1-4 show the survey to survey period changes in deployments.

| Table 1-3. Automatic Vehicle Location |                               |                                |                     |
|---------------------------------------|-------------------------------|--------------------------------|---------------------|
|                                       | 78 Largest Metropolitan Areas | Remainder of the United States | United States Total |
| <b>Transit Agency Status</b>          |                               |                                |                     |
| Operational Systems                   | 63                            | 25                             | 88                  |
| Planned Systems                       | 80                            | 62                             | 142                 |
| Agency Totals                         | 143                           | 87                             | 230                 |
| <b>Service Types</b>                  |                               |                                |                     |
| FR                                    | 122                           | 74                             | 196                 |
| DR                                    | 70                            | 16                             | 86                  |
| LR                                    | 12                            | 0                              | 12                  |
| HR                                    | 8                             | 0                              | 8                   |
| CR                                    | 8                             | 1                              | 9                   |
| FB                                    | 2                             | 3                              | 5                   |
| Service Type Totals                   | 222                           | 94                             | 316                 |
| <b>Technology</b>                     |                               |                                |                     |
| GPS                                   |                               | 86                             |                     |
| Sign Post/Odometer                    |                               | 1                              |                     |
| Dead Reckoning                        |                               | 1                              |                     |
| Loran-C                               |                               | 1                              |                     |
| Other/Unknown                         |                               | 5                              |                     |

Figure 1-2. Automatic Vehicle Location



| Table 1-4. Percent Change in Automatic Vehicle Location |           |           |           |
|---|-----------|-----------|-----------|
|   | 1995-1998 | 1998-2000 | 1995-2000 |
| Operational   | 177%      | 44%       | 300%      |
| Planned   | 56%       | 42%       | 122%      |
| Total   | 87%       | 43%       | 167%      |



AVL ranked 5<sup>th</sup> of the 9 APTS elements with full U.S. data in total number of agencies with operational systems (88) in 2000 and 4<sup>th</sup> in the total number of agencies with operational plus planned systems (230) according to responses to the Year 2000 survey. The percent increase in agencies with operational systems (44%) and operational plus planned systems (43%) ranked 6<sup>th</sup> and 8<sup>th</sup>, respectively, from 1998 to 2000.

### ***Vehicle Probes***

A Vehicle Probe is an AVL-equipped vehicle that is used to provide information for the calculation of travel times and speeds on highway facilities. Table 1-5 shows the Year 2000 deployment survey results.

| <b>Table 1-5. Vehicle Probes</b> |  |   |                                |
|----------------------------------|--|---|--------------------------------|
|                                  | <b>78 Largest<br/>Metropolitan Areas</b> | <b>Remainder of the<br/>United States</b> | <b>United States<br/>Total</b> |
| <b>Transit Agency Status</b>     |  |   |                                |
| Operational                      | 4  | 4   | 8                              |
| Planned                          | 2  | 2   | 4                              |
| Agency Totals                    | 6  | 6   | 12                             |
|                                  |  |   |                                |
| <b>Service Types</b>             |  |   |                                |
| FR                               | 6  | 5   | 11                             |
| DR                               | 1  | 1   | 2                              |
| Service Type Totals              | 7  | 6   | 13                             |
|                                  |  |   |                                |
| <b>Location</b>                  |  |   |                                |
| Freeway                          | 1  | 0   | 1                              |
| Arterial                         | 2  | 0   | 2                              |
| Freeway and Arterial             | 3  | 6   | 9                              |

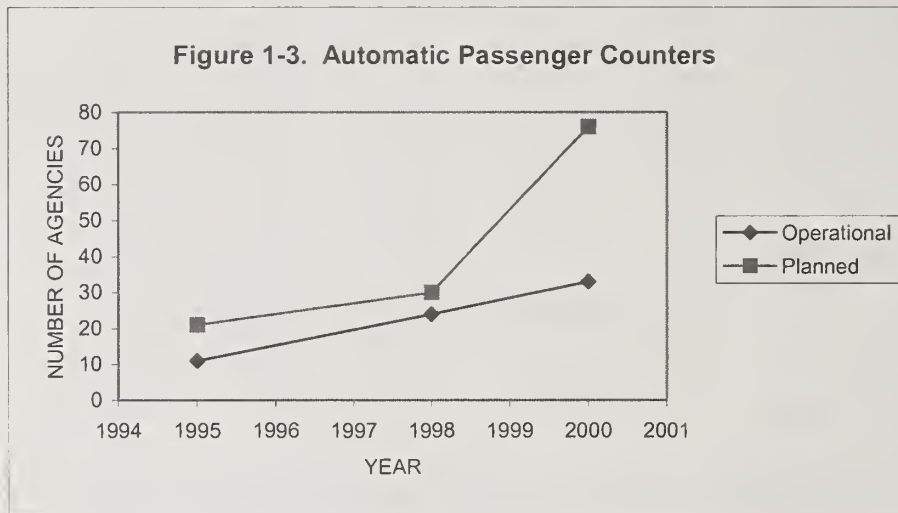
Very few Vehicle Probe systems have been deployed or are planned. Vehicle Probes ranked last of the 9 APTS elements with available data for the entire U.S. in total number of agencies with operational systems (8) in 2000 and last in the total number of agencies with operational plus planned systems (12) according to responses to the Year 2000 survey. Vehicle Probe data was not collected for the entire U.S. in prior surveys so no comparison is possible.

### ***Automatic Passenger Counters***

Automatic Passenger Counters (APC) are devices that count passengers as they enter and exit the transit vehicle or system. The most prevalent counting mechanism is infrared beams, but a few agencies use treadle mats. Table 1-6 shows the Year 2000 deployment survey results.

Figure 1-3 and Table 1-7 show the survey to survey period changes in deployments.

| Table 1-6. Automatic Passenger Counters |                               |                                |                     |
|---|-------------------------------|--------------------------------|---------------------|
|   | 78 Largest Metropolitan Areas | Remainder of the United States | United States Total |
| <b>Transit Agency Status</b>            |                               |                                |                     |
| Operational                             | 23                            | 10                             | 33                  |
| Planned                                 | 62                            | 12                             | 74                  |
| Agency Totals                           | 85                            | 22                             | 107                 |
| <b>Service Types</b>                    |                               |                                |                     |
| FR                                      | 82                            | 21                             | 103                 |
| DR                                      | 9                             | 7                              | 16                  |
| LR                                      | 11                            | 0                              | 11                  |
| HR                                      | 0                             | 1                              | 1                   |
| CR                                      | 3                             | 0                              | 3                   |
| FB                                      | 1                             | 0                              | 1                   |
| Service Type Totals                     | 106                           | 29                             | 135                 |



| Table 1-7. Percent Change in Automatic Passenger Counters |           |           |           |
|---|-----------|-----------|-----------|
|   | 1995-1998 | 1998-2000 | 1995-2000 |
| Operational   | 118%      | 38%       | 200%      |
| Planned   | 43%       | 147%      | 252%      |
| Total   | 69%       | 98%       | 234%      |

APCs ranked 7<sup>th</sup> of the 9 APTS elements with entire U.S. data in total number of agencies with operational systems (33) in 2000 and 7<sup>th</sup> in the total number of agencies with operational plus planned systems (107) according to responses to the Year 2000 survey. The percent increase in agencies with operational systems (38%) and operational plus planned systems (98%) ranked 8<sup>th</sup> and 3<sup>rd</sup>, respectively, from 1998 to 2000.

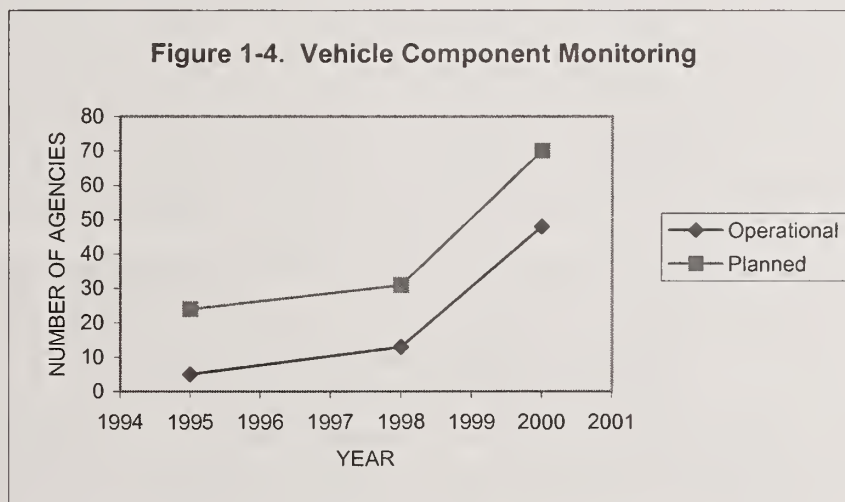


## Vehicle Component Monitoring

Vehicle Component Monitoring is the remote collection, in real time, of vehicle conditions such as engine temperature, oil pressure, tire pressure, etc. Table 1-8 shows the Year 2000 deployment survey results.

| Table 1-8. Vehicle Component Monitoring |                               |                                |                     |
|---|-------------------------------|--------------------------------|---------------------|
|   | 78 Largest Metropolitan Areas | Remainder of the United States | United States Total |
| <b>Transit Agency Status</b>            |                               |                                |                     |
| Operational Systems                     | 28                            | 18                             | 46                  |
| Planned Systems                         | 50                            | 18                             | 68                  |
| Agency Totals                           | 78                            | 36                             | 114                 |
| <b>Service Types</b>                    |                               |                                |                     |
| FR                                      | 66                            | 34                             | 100                 |
| DR                                      | 37                            | 12                             | 49                  |
| LR                                      | 2                             | 0                              | 2                   |
| HR                                      | 4                             | 0                              | 4                   |
| CR                                      | 5                             | 0                              | 5                   |
| FB                                      | 2                             | 1                              | 3                   |
| Service Type Totals                     | 116                           | 47                             | 163                 |

Figure 1-4 and Table 1-9 show the survey to survey period changes in deployments.



| Table 1-9. Percent Change in Vehicle Component Monitoring |           |           |           |
|---|-----------|-----------|-----------|
|   | 1995-1998 | 1998-2000 | 1995-2000 |
| Operational   | 160%      | 254%      | 820%      |
| Planned   | 29%       | 119%      | 183%      |
| Total   | 52%       | 159%      | 293%      |

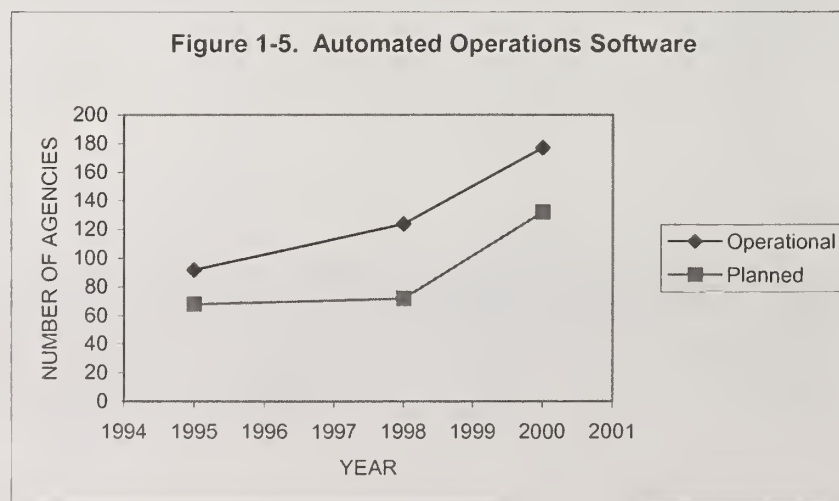
Vehicle Component Monitoring ranked 6<sup>th</sup> of the 9 APTS elements with entire U.S. data in the total number of agencies with operational systems (46) in 2000 and in the total number of agencies with operational plus planned systems (114) according to responses to the Year 2000 survey. The percent increase in agencies with operational systems (254%) and operational plus planned systems (159%) ranked 1<sup>st</sup> in both status categories between 1998 to 2000.

### ***Automated Operations Software***

Automated Operations Software encompasses computer programs that collect, process, and/or analyze operational data in ways that will assist transit agencies in providing improved or more efficient service or in reducing service cost. This includes computer assisted scheduling and dispatching of demand responsive service which was reported separately in previous deployment reports. Table 1-10 shows the Year 2000 deployment survey results.

| Table 1-10. Automated Operations Software |                               |                                |                     |
|---|-------------------------------|--------------------------------|---------------------|
|   | 78 Largest Metropolitan Areas | Remainder of the United States | United States Total |
| <b>Transit Agency Status</b>              |                               |                                |                     |
| Operational Systems                       | 75                            | 102                            | 177                 |
| Planned Systems                           | 64                            | 68                             | 132                 |
| Agency Totals                             | 139                           | 170                            | 309                 |
| <b>Service Types</b>                      |                               |                                |                     |
| FR  | 107                           | 95                             | 202                 |
| DR  | 85                            | 130                            | 215                 |
| LR  | 11                            | 0                              | 11                  |
| HR  | 7                             | 0                              | 7                   |
| CR  | 4                             | 1                              | 5                   |
| FB  | 2                             | 2                              | 4                   |
| Service Type Totals                       | 216                           | 228                            | 444                 |

Figure 1-5 and Table 1-11 show the survey to survey deployment changes.



| <b>Table 1-11. Percent Change in Automated Operations Software</b> |           |           |           |
|--|-----------|-----------|-----------|
|  | 1995-1998 | 1998-2000 | 1995-2000 |
| Operational  | 35%       | 43%       | 92%       |
| Planned  | 6%        | 83%       | 94%       |
| Total  | 23%       | 58%       | 93%       |

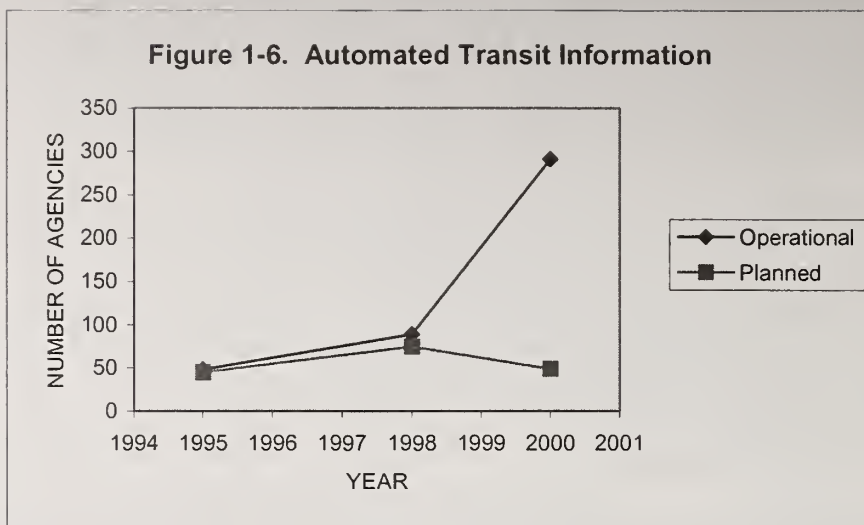
The number of transit agencies with operational Automated Operations Software (177) ranked 3<sup>rd</sup> of the 9 APTS elements with entire U.S. data in 2000 and 3<sup>rd</sup> in the total number of agencies with operational plus planned systems (309) according to responses to the Year 2000 survey. The percent increase in agencies with operational systems (43%) and operational plus planned systems (58%) ranked 7<sup>th</sup> and 5<sup>th</sup>, respectively, from 1998 to 2000.

### ***Automated Transit Information***

The Year 2000 surveys collected information on Automated Transit Information by 14 distribution methods or media. These have been collapsed into pre-trip, wayside, and in-vehicle systems for presentation purposes. Table 1-12 shows the Year 2000 deployment survey results.

| <b>Table 1-12. Automated Transit Information</b> |  |   |                                |
|--|--|---|--------------------------------|
|  | <b>78 Largest<br/>Metropolitan Areas</b> | <b>Remainder of the<br/>United States</b> | <b>United States<br/>Total</b> |
| <b>Transit Agency Status</b>                     |  |   |                                |
| Operational Systems                              | 173                                      | 118                                       | 291                            |
| Planned Systems                                  | 16                                       | 32  | 48                             |
| Agency Totals                                    | 189                                      | 150                                       | 339                            |
|  |  |   |                                |
| <b>Service Types</b>                             |  |   |                                |
| FR   |  | 128                                       |                                |
| DR   |  | 80  |                                |
| HR   |  | 1   |                                |
| CR   |  | 1   |                                |
| FB   |  | 5   |                                |
| Service Type Totals                              |  | 215                                       |                                |
|  |  |   |                                |
| <b>Location</b>                                  |  |   |                                |
| Pre-Trip   | 187                                      | 147                                       | 334                            |
| Wayside  | 117                                      | 50  | 167                            |
| In-Vehicle                                       | 96                                       | 28  | 124                            |

Figure 1-6 and Table 1-13 show the survey to survey period changes in deployments.



| Table 1-13. Percent Change in Automated Transit Information |           |           |           |
|---|-----------|-----------|-----------|
|   | 1995-1998 | 1998-2000 | 1995-2000 |
| Operational   | 85%       | 227%      | 506%      |
| Planned   | 67%       | -36%      | 7%        |
| Total   | 76%       | 107%      | 265%      |

Automated Transit Information ranks 1<sup>st</sup> of the 9 APTS elements with entire U.S. data in 2000 in terms of the number of agencies with operational systems (291) and in the total number of agencies with operational plus planned systems (339) according to responses to the Year 2000 survey. The percent increase in agencies with operational systems (227%) and operational plus planned systems (107%) ranked 2<sup>nd</sup> in both status categories from 1998 to 2000. The number of agencies planning to deploy Automated Transit Information systems is the lowest (48), except for Vehicle Probes, of any APTS element, presumably because so many agencies already provide it. It is anticipated that further analysis of the survey responses will show that World Wide Web pages account for a large portion of the automated information available.

### ***Multimodal Traveler Information***

Multimodal Traveler Information is transit information presented to the public via a distribution medium which also includes information concerning other transit agencies' services or other transportation modes. Table 1-14 shows the Year 2000 deployment survey results.



| Table 1-14. Multimodal Traveler Information |                               |                                |                     |
|---|-------------------------------|--------------------------------|---------------------|
|   | 78 Largest Metropolitan Areas | Remainder of the United States | United States Total |
| <b>Transit Agency Status</b>                |                               |                                |                     |
| Operational Systems                         |                               | 16                             |                     |
| Planned Systems                             |                               | 25                             |                     |
| Agency Totals                               |                               | 41                             |                     |

Only 16 operational and 41 operational plus planned Multimodal Traveler Information systems were reported in the areas outside of the 78 largest U.S. metropolitan areas in the 2000 survey.

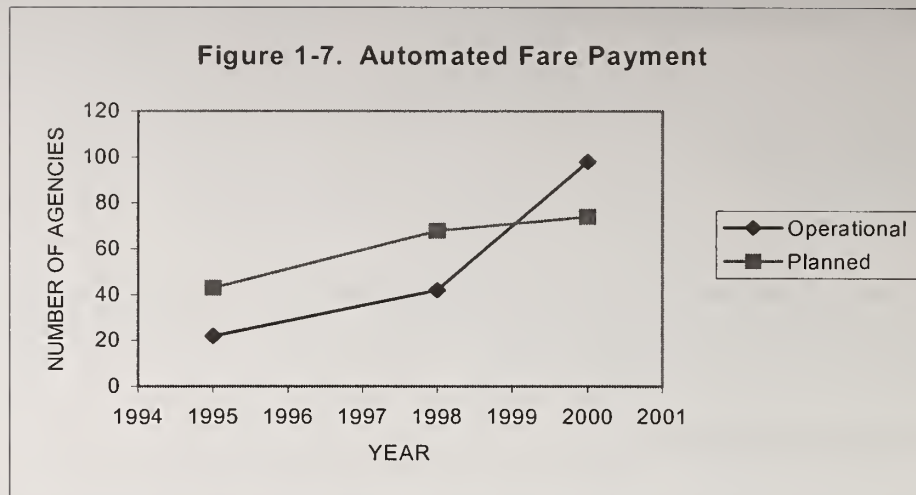
### ***Automated Fare Payment***

Automated Fare Payment is any system other than a registering farebox that automatically accepts a magnetic stripe card or a smart card for payment of the transit fare. Magnetic stripe cards include credit and debit cards. Table 1-15 shows the Year 2000 deployment survey results.

| Table 1-15. Automated Fare Payment |                               |                                |                     |
|------------------------------------|-------------------------------|--------------------------------|---------------------|
|                                    | 78 Largest Metropolitan Areas | Remainder of the United States | United States Total |
| <b>Transit Agency Status</b>       |                               |                                |                     |
| Operational Systems                | 69                            | 29                             | 98                  |
| Planned Systems                    | 59                            | 18                             | 77                  |
| Agency Totals                      | 128                           | 47                             | 175                 |
|                                    |                               |                                |                     |
| <b>Service Types</b>               |                               |                                |                     |
| FR                                 | 117                           | 46                             | 163                 |
| DR                                 | 41                            | 3                              | 44                  |
| LR                                 | 10                            | 0                              | 10                  |
| HR                                 | 10                            | 1                              | 11                  |
| CR                                 | 5                             | 0                              | 5                   |
| FB                                 | 4                             | 0                              | 4                   |
| Service Type Totals                | 187                           | 50                             | 237                 |
|                                    |                               |                                |                     |
| <b>Technology</b>                  |                               |                                |                     |
| Magnetic Stripe                    | 57                            | 31                             | 88                  |
| Smart Card                         | 29                            | 10                             | 39                  |
| Mag Stripe & Smart Card            | 42                            | 6                              | 48                  |

Figure 1-7 and Table 1-16 show the survey to survey period changes in deployments.





| Table 1-16 . Percent Change in Automated Fare Payment |           |           |           |
|---|-----------|-----------|-----------|
|   | 1995-1998 | 1998-2000 | 1995-2000 |
| Operational   | 91%       | 133%      | 345%      |
| Planned   | 58%       | 13%       | 79%       |
| Total   | 69%       | 59%       | 169%      |

Automated Fare Payment ranked 4<sup>th</sup> of the 9 APTS elements with entire U.S. data in total number of agencies with operational systems (98) in 2000 and 5<sup>th</sup> in the total number of agencies with operational plus planned systems (175) according to responses to the Year 2000 survey. The percent increase in agencies with operational systems (133%) and operational plus planned systems (59%) ranked 3<sup>rd</sup> and 4<sup>th</sup>, respectively, from 1998 to 2000. Magnetic stripe systems outnumber smart card systems by about three to two.

### ***Multi-Carrier Fare Integration***

Multi-Carrier Fare Integration consists of two or more transit agencies on which the same electronic payment media can be used to pay fares. Table 1-17 shows the Year 2000 deployment survey results.

| Table 1-17. Multi-Carrier Fare Integration |                               |                                |                     |
|--|-------------------------------|--------------------------------|---------------------|
|  | 78 Largest Metropolitan Areas | Remainder of the United States | United States Total |
| <b>Transit Agency Status</b>               |                               |                                |                     |
| Operational Systems                        |                               | 21                             |                     |
| Planned Systems                            |                               | 2                              |                     |
| Agency Totals                              |                               | 23                             |                     |

Only 21 operational and 23 operational plus planned Multi-Carrier Fare Integration systems were reported in the areas outside of the 78 largest U.S. metropolitan areas in the 2000 survey.

## ***Mobility Manager***

Transit agencies that handle the travel requests or the dispatching of vehicles for multiple agencies (e.g., social service agencies, Health and Human Service agencies, transit agencies, etc.) are considered Mobility Managers. Table 1-18 shows the Year 2000 deployment survey results.

| <b>Table 1-18. Mobility Manager</b> |                                      |                                       |                            |
|-------------------------------------|--------------------------------------|---------------------------------------|----------------------------|
|                                     | <b>78 Largest Metropolitan Areas</b> | <b>Remainder of the United States</b> | <b>United States Total</b> |
| <b>Transit Agency Status</b>        |                                      |                                       |                            |
| Operational Systems                 |                                      | 75                                    |                            |
| Planned Systems                     |                                      | 13                                    |                            |
| Agency Totals                       |                                      | 88                                    |                            |
|                                     |                                      |                                       |                            |
| <b>Service Types</b>                |                                      |                                       |                            |
| FR                                  |                                      | 8                                     |                            |
| DR                                  |                                      | 80                                    |                            |
| Service Type Totals                 |                                      | 88                                    |                            |

Only 75 operational and 88 operational plus planned Mobility Manager systems were reported in the areas outside of the 78 largest U.S. metropolitan areas in the 2000 survey.

## ***Transportation Management Centers***

A Transportation Management Center is a facility that houses personnel that control both transit vehicles and highway vehicles or equipment (e.g., transit vehicles, incident management vehicles, traffic signals, variable message signs, etc.). Table 1-19 shows the Year 2000 deployment survey results.

| <b>Table 1-19. Transportation Management Center</b> |                                      |                                       |                            |
|---|--------------------------------------|---------------------------------------|----------------------------|
|   | <b>78 Largest Metropolitan Areas</b> | <b>Remainder of the United States</b> | <b>United States Total</b> |
| <b>Transit Agency Status</b>                        |                                      |                                       |                            |
| Operational Systems                                 |                                      | 8                                     |                            |
| Planned Systems                                     |                                      | 3                                     |                            |
| Agency Totals                                       |                                      | 11                                    |                            |
|   |                                      |                                       |                            |
| <b>Service Types</b>                                |                                      |                                       |                            |
| FR  |                                      | 9                                     |                            |
| DR  |                                      | 1                                     |                            |
| HR  |                                      | 1                                     |                            |
| Service Type Totals                                 |                                      | 11                                    |                            |

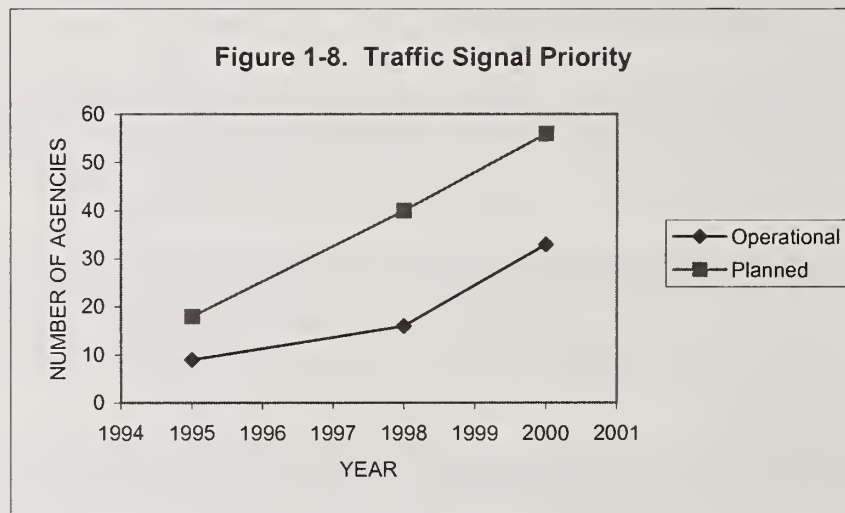
Only 8 operational and 11 operational plus planned Transportation Management Centers were reported in the areas outside of the 78 largest U.S. metropolitan areas in the 2000 survey.

## Traffic Signal Priority

Traffic Signal Priority systems are those that provide an advanced or extended green signal phase for approaching transit vehicles. Table 1-20 shows the Year 2000 deployment survey results.

| Table 1-20. Traffic Signal Priority |                               |                                |                     |
|-------------------------------------|-------------------------------|--------------------------------|---------------------|
|                                     | 78 Largest Metropolitan Areas | Remainder of the United States | United States Total |
| <b>Transit Agency Status</b>        |                               |                                |                     |
| Operational Systems                 | 18                            | 12                             | 30                  |
| Planned Systems                     | 40                            | 18                             | 58                  |
| Agency Totals                       | 58                            | 30                             | 88                  |
| <b>Service Types</b>                |                               |                                |                     |
| FR                                  | 52                            | 30                             | 82                  |
| DR                                  | 4                             | 0                              | 4                   |
| LR                                  | 8                             | 0                              | 8                   |
| FB                                  | 1                             | 0                              | 1                   |
| Service Type Totals                 | 65                            | 30                             | 95                  |

Figure 1-8 and Table 1-21 show the survey to survey period changes in deployments.



| Table 1-21. Percent Change in Traffic Signal Priority |           |           |           |
|---|-----------|-----------|-----------|
|   | 1995-1998 | 1998-2000 | 1995-2000 |
| Operational   | 78%       | 88%       | 233%      |
| Planned   | 122%      | 45%       | 222%      |
| Total   | 107%      | 57%       | 226%      |



Traffic Signal Priority ranked 8<sup>th</sup> of the 9 APTS elements with entire U.S. data in total number of agencies with operational systems (30) in 2000 and 8<sup>th</sup> in the total number of agencies with operational plus planned systems (88) according to responses to the Year 2000 survey. The percent increase in agencies with operational systems (88%) and operational plus planned systems (57%) ranked 4<sup>th</sup> and 6<sup>th</sup>, respectively, from 1998 to 2000.

### ***ITS Integration***

ITS Integration is a situation in which agencies share infrastructure (e.g., computer systems, communication lines), coordinate operations (e.g., common control strategy), or share information in real time via electronic means. Table 1-22 shows the Year 2000 deployment survey results.

| <b>Table 1-22. ITS Integration</b> |  |   |                                |
|------------------------------------|--|---|--------------------------------|
|                                    | <b>78 Largest<br/>Metropolitan Areas</b> | <b>Remainder of the<br/>United States</b> | <b>United States<br/>Total</b> |
| <b>Transit Agency Status</b>       |  |   |                                |
| Operational Systems                |  | 59  |                                |
| Planned Systems                    |  | 25  |                                |
| Agency Totals                      |  | 84  |                                |

Fifty-nine operational and 84 operational plus planned deployments of Integrated ITS systems were reported in the areas outside of the 78 largest U.S. metropolitan areas in the 2000 survey.

### ***Surveillance Cameras***

Surveillance Cameras have been placed on transit vehicles for the recording or real-time observation of on-board activities. Table 1-23 shows the Year 2000 deployment survey results.

| <b>Table 1-23. Surveillance Cameras</b> |  |   |                                |
|---|--|---|--------------------------------|
|   | <b>78 Largest<br/>Metropolitan Areas</b> | <b>Remainder of the<br/>United States</b> | <b>United States<br/>Total</b> |
| <b>Transit Agency Status</b>            |  |   |                                |
| Operational Systems                     |  | 47  |                                |
| Planned Systems                         |  | 19  |                                |
| Agency Totals                           |  | 66  |                                |
|   |  |   |                                |
| <b>Service Types</b>                    |  |   |                                |
| FR                                      |  | 45  |                                |
| DR                                      |  | 22  |                                |
| Service Type Totals                     |  | 67  |                                |

Forty-seven operational and 66 operational plus planned deployments of Surveillance Cameras on transit vehicles were reported in the areas outside of the 78 largest U.S. metropolitan areas in the 2000 survey.

### ***Silent Alarms***

A Silent Alarm is a concealed button near the vehicle operator's position that can be pressed to alert the dispatch center that an on-board emergency situation exists which prevents the operator from using the radio. Table 1-24 shows the Year 2000 deployment survey results.

| <b>Table 1-24. Silent Alarms</b> |  |   |                                |
|----------------------------------|--|---|--------------------------------|
|                                  | <b>78 Largest<br/>Metropolitan Areas</b> | <b>Remainder of the<br/>United States</b> | <b>United States<br/>Total</b> |
| <b>Transit Agency Status</b>     |  |   |                                |
| Operational Systems              |  | 41  |                                |
| Planned Systems                  |  | 11  |                                |
| Agency Totals                    |  | 52  |                                |
|                                  |  |   |                                |
| <b>Service Types</b>             |  |   |                                |
| FR                               |  | 39  |                                |
| DR                               |  | 25  |                                |
| Service Type Totals              |  | 64  |                                |

Forty-one operational and 52 operational plus planned deployments of Silent Alarms were reported in the areas outside of the 78 largest U.S. metropolitan areas in the 2000 survey.

### ***Covert Microphones***

Covert Microphones are microphones that are hidden from public view that allow dispatchers to listen to what is happening on-board a transit vehicle after the vehicle operator has pressed the Silent Alarm. Table 1-25 shows the Year 2000 deployment survey results.

| <b>Table 1-25. Covert Microphones</b> |  |   |                                |
|---------------------------------------|--|---|--------------------------------|
|                                       | <b>78 Largest<br/>Metropolitan Areas</b> | <b>Remainder of the<br/>United States</b> | <b>United States<br/>Total</b> |
| <b>Transit Agency Status</b>          |  |   |                                |
| Operational Systems                   |  | 8   |                                |
| Planned Systems                       |  | 9   |                                |
| Agency Totals                         |  | 17  |                                |
|                                       |  |   |                                |
| <b>Service Types</b>                  |  |   |                                |
| FR                                    |  | 8   |                                |
| DR                                    |  | 12  |                                |
| Service Type Totals                   |  | 20  |                                |



Eight operational and 17 operational plus planned deployments of Covert Microphones were reported in the areas outside of the 78 largest U.S. metropolitan areas in the 2000 survey.



## **SECTION 2. APTS DEPLOYMENT BY TRANSIT AGENCY IN THE UNITED STATES' 78 LARGEST METROPOLITAN AREAS**

Table 2 presents the information collected by Oak Ridge National Laboratory/SAIC for transit agencies residing in jurisdictions of 50,000 persons or more within the 78 largest metropolitan areas in the U.S. A total of 221 transit agencies were surveyed. All of these agencies which have installed, or are planning to install, any of the APTS elements are listed in the Table. As indicated in the Legend, entries enclosed by brackets signify elements either in the implementation or planning stage and are expected to be operational by the year 2005. All other entries indicate operational elements.

The agencies are arranged alphabetically, first by state and then by agency name. Table 2 also lists the number of vehicles operated by each agency (directly or by contract) in each service type. However, the APTS element is not necessarily installed on every vehicle in the service type for which it is operational or planned.

As mentioned in the Introduction, after the long survey form failed to achieve an adequate response, a shorter form was used. This short form eliminated several pieces of information obtained via the long form. Since partial information would not convey the correct level of deployment for all transit agencies in the 78 largest metropolitan areas, the APTS categories for which information was not obtained in *both* the long and short survey forms are not included in Table 2. Further, the short form did not solicit the service type for the APTS elements of Advanced Communications or Advanced Transit Information. In these instances, the APTS deployment status is listed for the agency as a whole and not by service types. Table 2 also covers fewer APTS elements than Table 3 for reasons discussed in the Introduction.

Table 2. APTS Deployment by Transit Agency In the United States' 78 Largest Metropolitan Areas

| Agency  | City              | State | Service Type | Vehicles (2000) | Advanced Communications | Automatic Vehicle Location | Vehicle Probes | Automatic Passenger Counters | Vehicle Component Monitoring | Automated Operations Software | Automated Transit Information | Automated Fare Payment | Traffic Signal Priority |
|---|-------------------|-------|--------------|-----------------|-------------------------|----------------------------|----------------|------------------------------|------------------------------|-------------------------------|-------------------------------|------------------------|-------------------------|
| Birmingham-Jefferson County Transit Authority | Birmingham        | AL    | FR<br>DR     | 68<br>18        | TR,DIG                  | [X]                        |                | [X]                          | [X]                          | [X]                           |                               | [MS],[SC]              |                         |
| Central Arkansas Transit Authority            | North Little Rock | AR    | FR<br>DR     | 69<br>15        | TR                      | [X]                        |                | [X]                          |                              | [X]                           | P,W,[I]                       | [MS],[SC]              |                         |
| Glendale Urban Shuttle                        | Glendale          | AZ    | FR           | 3               | TR,DIG                  |                            |                | [X]                          |                              | [X]                           | P,W,[I]                       | [MS],[SC]              |                         |
| Glendale Dial-A-Ride                          | Glendale          | AZ    | DR           | 15              | TR,DIG                  | [X]                        |                |                              | X                            | X                             | P,W,[I]                       |                        |                         |
| Mesa City                                     | Mesa City         | AZ    | FR           | 33              | TR                      | X                          |                | [X]                          |                              | X                             | P,W                           | [MS],[SC]              |                         |
| Peoria Transit                                | Peoria            | AZ    | DR           | 9               |                         | X                          |                |                              | [X]                          | [X]                           | P,I                           |                        |                         |
| Phoenix Transit System                        | Phoenix           | AZ    | FR<br>DR     | 500<br>140      | [TR]                    | X                          |                | [X]                          | [X]                          | X                             | P,W,[I]                       | [MS],[SC]              | [X]                     |
| Regional Public Transportation Authority      | Phoenix           | AZ    | FR<br>DR     | 74<br>49        | [DIG]                   | X                          |                |                              |                              |                               | P,W                           | [MS],[SC]              |                         |
| Scottsdale City                               | Scottsdale        | AZ    | FR<br>DR     | 36<br>9         | TR                      | [X]                        |                |                              | [X]                          | [X]                           | P,W                           | [MS],[SC]              |                         |
| Sun Cities Area Transit System                | Sun City          | AZ    | DR           | 14              | TR,DIG                  |                            |                |                              |                              |                               |                               |                        |                         |
| Sun Tran                                      | Tucson            | AZ    | FR           | 199             | DIG                     | X                          |                | X                            | X                            | X                             | P,W                           | MS                     |                         |
| Surprise Dial-A-Ride                          | Surprise          | AZ    | DR           | 3               | TR,DIG                  |                            |                |                              |                              |                               |                               |                        |                         |
| VanTran                                       | Tucson            | AZ    | DR           | 64              |                         | X                          |                |                              | X                            | X                             | P,[W]                         |                        |                         |
| AC Transit                                    | Oakland           | CA    | FR<br>DR     | 708<br>35       | [X]                     | [X]                        |                | X                            | [X]                          | [X]                           | P,[W],[I]                     | [MS],[SC]              | [X]                     |
| Access Services Incorporated                  | Los Angeles       | CA    | DR           | 326             | DIG                     | [X]                        |                |                              |                              | X                             |                               | [MS],[SC]              |                         |
| Antelope Valley Transit Authority             | Lancaster         | CA    | FR           | 35              |                         |                            |                |                              |                              |                               |                               |                        |                         |
| Arcadia Transit                               | Arcadia           | CA    | DR           | 18              | TR,DIG                  | X                          |                |                              |                              | X                             | P                             | [SC]                   |                         |
| Bay Area Rapid Transit District               | San Francisco     | CA    | HR           | 669             | DIG                     | X                          |                |                              |                              | X                             | P,W,I                         | [MS],[SC]              |                         |
| CalTrain                                      | San Carlos        | CA    | CR           | 107             | TR,[DIG]                | [X]                        |                | [X]                          |                              | [X]                           | P,W,I                         | [MS],[SC]              |                         |
| Central Contra Costa Transit Authority        | Concord           | CA    | FR<br>DR     | 112<br>44       | TR,DIG                  | X                          | F,A            |                              |                              |                               | P,[I]                         | [SC]                   |                         |
| Commerce City Municipal Bus Lines             | Commerce          | CA    | FR<br>DR     | 9<br>3          |                         |                            |                |                              |                              |                               | P,W                           |                        |                         |



Table 2. APTS Deployment by Transit Agency in the United States' 78 Largest Metropolitan Areas

| Agency   | City           | State | Service Type | Vehicles (2000) | Advanced Communications | Automatic Vehicle Location | Vehicle Probes | Automatic Passenger Counters | Vehicle Component Monitoring | Automated Operations Software | Automated Transit Information | Automated Fare Payment | Traffic Signal Priority |
|--|----------------|-------|--------------|-----------------|-------------------------|----------------------------|----------------|------------------------------|------------------------------|-------------------------------|-------------------------------|------------------------|-------------------------|
| Corona City Dial-A-Ride                          | Corona         | CA    | DR           | 11              |                         |                            |                | [X]                          | [X]                          | [X]                           | P, [W], [I]                   | [MS]                   |                         |
| Culver City Municipal Bus Lines                  | Culver City    | CA    | FR           | 42              | TR                      |                            |                | [X]                          | [X]                          |                               |                               |                        |                         |
| Fairfield City, Fairfield Transit System         | Fairfield City | CA    | FR           | 26              | [DIG]                   | [X]                        |                |                              | [X]                          | [X]                           | [P], [W], [I]                 | [X]                    |                         |
|  |                |       | DR           | 13              |                         | [X]                        |                |                              | [X]                          | [X]                           |                               |                        |                         |
| Fresno Area Express                              | Fresno         | CA    | FR           | 104             | TR, DIG                 | X                          |                | X                            | X                            | X                             | P, W, I                       |                        |                         |
|  |                |       | DR           | 23              |                         | X                          |                |                              | X                            | X                             |                               |                        |                         |
| Gardena Municipal Bus Line                       | Gardena        | CA    | FR           | 48              | DIG                     | X                          |                |                              |                              |                               | P, W, [I]                     | [MS]                   |                         |
|  |                |       | DR           | 10              |                         |                            |                |                              |                              |                               |                               |                        |                         |
| Golden Empire Transit District                   | Bakersfield    | CA    | FR           | 72              | TR, [DIG]               | [X]                        |                | [X]                          |                              | [X]                           | [I]                           |                        |                         |
|  |                |       | DR           | 9               |                         |                            |                |                              |                              |                               |                               |                        |                         |
| La Mirada City Transit                           | La Mirada      | CA    | DR           | 13              |                         |                            |                |                              |                              |                               | P                             |                        |                         |
| Laguna Beach Municipal Transit Lines             | Laguna Beach   | CA    | FR           | 10              | DIG                     |                            |                |                              |                              |                               | P, W                          |                        |                         |
|  |                |       | FR           | 67              | TR                      | [X]                        |                | [X]                          | [X]                          | [X]                           | P, [W], [I]                   | [SC]                   | [X]                     |
|  |                |       | DR           | 18              |                         | [X]                        |                | [X]                          | [X]                          | X                             |                               | [SC]                   |                         |
| Livermore/Amador Valley Transit Authority        | Livermore      | CA    | FR           | 220             | [TR]                    | [X]                        |                | [X]                          | [X]                          | [X]                           | [P], W, [I]                   | [MS], [SC]             |                         |
|  |                |       | DR           | 26              |                         |                            |                |                              |                              | X                             |                               |                        |                         |
|  |                |       | FR           | 307             |                         | [X]                        |                | [X]                          |                              | [X]                           |                               |                        | [X]                     |
| Long Beach Public Transportation Company         | Long Beach     | CA    | FR           | 100             | TR, [DIG]               |                            |                |                              |                              | X                             | P, [W]                        |                        |                         |
|  |                |       | DR           | 100             |                         |                            |                |                              |                              |                               |                               |                        |                         |
|  |                |       | FR           | 65              |                         | [X]                        |                |                              |                              | [X]                           |                               | MS, SC                 | [X]                     |
| Montebello Bus Lines                             | Montebello     | CA    | FR           | 5               | [DIG]                   |                            |                |                              |                              |                               | [P], [W], [I]                 |                        |                         |
| Monterey-Salinas Transit                         | Monterey       | CA    | FR           | 78              | [DIG]                   | [X]                        |                |                              |                              | [X]                           | P, [W]                        |                        |                         |
|  |                |       | DR           | 25              |                         |                            |                |                              |                              |                               |                               |                        |                         |
| Napa County Transit                              | Napa           | CA    | FR           | 19              |                         | X                          |                |                              |                              | X                             | P                             | [SC]                   | X                       |
|  |                |       | DR           | 15              |                         |                            |                |                              |                              | X                             |                               |                        |                         |
| North San Diego County Transit Development Board | Oceanside      | CA    | FR           | 154             | [DIG]                   | [X]                        |                |                              |                              | X                             | P                             | MS                     |                         |
|  |                |       | DR           | 33              |                         |                            |                |                              |                              | X                             |                               |                        |                         |
|  |                |       | HR           | 26              |                         |                            |                |                              |                              | [X]                           |                               |                        |                         |
| Norwalk Transit System                           | Norwalk        | CA    | FR           | 27              | [DIG]                   | [X]                        |                | [X]                          | [X]                          | [X]                           | P, W, I                       | MS, [SC]               | [X]                     |
|  |                |       | DR           | 4               |                         | [X]                        |                | [X]                          | [X]                          | [X]                           |                               | MS, [SC]               |                         |

Table 2. APTS Deployment by Transit Agency in the United States' 78 Largest Metropolitan Areas

| Agency                                      | City          | State | Service Type |    | Vehicles (2000) |     | Advanced Communications | Automatic Vehicle Location | Vehicle Probes | Automatic Passenger Counters | Vehicle Component Monitoring | Automated Operations Software | Automated Transit Information | Automated Fare Payment | Traffic Signal Priority |
|---|---------------|-------|--------------|----|-----------------|-----|-------------------------|----------------------------|----------------|------------------------------|------------------------------|-------------------------------|-------------------------------|------------------------|-------------------------|
| Orange County Transportation Authority      | Orange        | CA    | FR           | DR | 486             | 238 | TR,DIG                  | X                          |                | X                            |                              | X                             | [P],[W],[I]                   | [MS],[SC]              |                         |
|   |               |       | FR           | LR | 209             | 36  | TR                      | X                          |                |                              |                              | X                             | P,W                           |                        | X                       |
| Sacramento Regional Transit District        | Sacramento    | CA    | FR           | DR | 316             | 16  | TR,DIG                  | X                          |                | X                            |                              |                               | P,[W],[I]                     | [MS],[SC]              | X                       |
|   |               |       | FR           | LR | 509             | 123 | TR,[DIG]                | X                          |                |                              |                              | X                             | P,[W]                         | [MS],[SC]              | X                       |
| San Diego Trolley Incorporated              | San Diego     | CA    | FR           | DR | 350             | 176 |                         | X                          |                | X                            | X                            |                               | P,I                           | [MS]                   | X                       |
|   |               |       | FR           | LR | 362             | 60  | [TR],[DIG]              | X                          |                | X                            | X                            | X                             | P,[W]                         | [MS],[SC]              | X                       |
| San Francisco Municipal Railway             | San Francisco | CA    | FR           | DR | 525             | 50  | [TR]                    | X                          |                | X                            |                              | X                             | P,W,I                         | [SC]                   |                         |
|   |               |       | FR           | LR | 79              | 51  | DIG                     |                            |                | X                            |                              |                               | P                             | MS                     |                         |
| San Mateo County Transit District           | San Carlos    | CA    | FR           | DR | 167             |     |                         | X                          |                | X                            |                              | X                             | P,W,I                         | MS,[SC]                | X                       |
|   |               |       | FR           | LR | 21              | 10  | [DIG]                   |                            |                |                              |                              |                               |                               | [SC]                   | X                       |
| Santa Clara Valley Transportation Authority | San Jose      | CA    | FR           | DR | 9               | 4   |                         |                            |                | X                            |                              |                               | P,I                           | [SC]                   |                         |
|   |               |       | FR           | LR | 54              | 10  |                         | X                          |                |                              |                              |                               | P,W                           |                        | X                       |
| Santa Cruz Metropolitan Transit             | Santa Cruz    | CA    | FR           | DR | 42              | 5   |                         |                            |                | X                            |                              |                               | P,I                           | SC                     |                         |
|   |               |       | FR           | LR | 152             | 46  | DIG,X                   | X                          |                |                              | X                            |                               | P,W                           |                        |                         |
| Santa Monica Municipal Bus Lines            | Santa Monica  | CA    | FR           | DR | 6               |     | DIG                     | X                          |                | X                            |                              |                               | P,[W],[I]                     | [SC]                   |                         |
|   |               |       | FR           | LR |                 |     |                         |                            |                |                              |                              |                               |                               |                        |                         |
| Santa Rosa City Bus                         | Santa Rosa    | CA    | FR           | DR |                 |     |                         |                            |                |                              |                              |                               |                               |                        |                         |
|   |               |       | FR           | LR |                 |     |                         |                            |                |                              |                              |                               |                               |                        |                         |
| Simi Valley Transit                         | Simi Valley   | CA    | FR           | DR |                 |     |                         |                            |                |                              |                              |                               |                               |                        |                         |
|   |               |       | FR           | LR |                 |     |                         |                            |                |                              |                              |                               |                               |                        |                         |
| Sonoma County Transit                       | Santa Rosa    | CA    | FR           | DR |                 |     |                         |                            |                |                              |                              |                               |                               |                        |                         |
|   |               |       | FR           | LR |                 |     |                         |                            |                |                              |                              |                               |                               |                        |                         |
| South Coast Area Transit                    | Oxnard        | CA    | FR           | DR |                 |     |                         |                            |                |                              |                              |                               |                               |                        |                         |
|   |               |       | FR           | LR |                 |     |                         |                            |                |                              |                              |                               |                               |                        |                         |
| Southern California Regional Rail Authority | Los Angeles   | CA    | FR           | DR |                 |     |                         |                            |                |                              |                              |                               |                               |                        |                         |
|   |               |       | FR           | LR |                 |     |                         |                            |                |                              |                              |                               |                               |                        |                         |
| Torrance City Transit System                | Torrance      | CA    | FR           | DR |                 |     |                         |                            |                |                              |                              |                               |                               |                        |                         |
|   |               |       | FR           | LR |                 |     |                         |                            |                |                              |                              |                               |                               |                        |                         |

Table 2. APTS Deployment by Transit Agency in the United States' 78 Largest Metropolitan Areas

| Agency  | City          | State | Service Type | Vehicles (2000) | Advanced Communications | Automatic Vehicle Location | Vehicle Probes | Automatic Passenger Counters | Vehicle Component Monitoring | Automated Operations Software | Automated Transit Information | Automated Fare Payment | Traffic Signal Priority |
|---|---------------|-------|--------------|-----------------|-------------------------|----------------------------|----------------|------------------------------|------------------------------|-------------------------------|-------------------------------|------------------------|-------------------------|
| Vallejo Transit & San Francisco Ferry           | Vallejo       | CA    | FR           | 54              |                         |                            |                |                              |                              |                               | P                             | [MS]                   |                         |
|   |               |       | DR           | 10              |                         |                            |                |                              |                              |                               |                               |                        |                         |
|   |               |       | FB           | 3               |                         |                            |                |                              |                              |                               |                               | [MS]                   | [X]                     |
| Victor Valley Transit Authority                 | Victor Valley | CA    | FR           | 21              |                         |                            |                |                              |                              |                               | P                             | [MS],[SC]              |                         |
|   |               |       | DR           | 26              |                         |                            |                |                              | X                            |                               |                               |                        |                         |
|   |               |       | FR           | 25              |                         |                            |                |                              |                              |                               | P <sub>i</sub> [W],I          | MS                     |                         |
| Visalia City Coach                              | Fresno        | CA    | DR           | 6               | [DIG]                   | [X]                        |                |                              |                              |                               |                               |                        |                         |
|   |               |       | FR           | 33              |                         | [X]                        |                |                              |                              |                               | P                             | [SC]                   | [X]                     |
|   |               |       | DR           | 12              | DIG                     | [X]                        |                |                              | [X]                          |                               |                               | [SC]                   |                         |
| Western Contra Costa Transit Authority          | Pinole        | CA    | FR           | 13              |                         |                            |                |                              |                              |                               | P                             |                        |                         |
|   |               |       | DR           | 6               | [TR],[DIG]              |                            |                |                              |                              |                               |                               |                        |                         |
|   |               |       | FR           | 1076            |                         | X                          |                | [X]                          |                              | X                             | P,W,I                         |                        |                         |
| City of Greeley                                 | Greeley       | CO    | DR           | 183             |                         | [X]                        |                |                              |                              |                               |                               |                        |                         |
|   |               |       | LR           | 31              |                         | X                          |                | [X]                          |                              |                               | P,W                           | MS                     |                         |
|   |               |       | FR           | 432             | [X]                     |                            |                |                              |                              |                               |                               |                        |                         |
| Regional Transportation District                | Denver        | CO    | CR           | 255             |                         |                            |                |                              |                              |                               |                               |                        |                         |
|   |               |       | FR           | 233             |                         |                            |                |                              |                              |                               |                               | MS                     |                         |
|   |               |       | FR           | 113             | TR                      |                            |                |                              |                              |                               |                               | MS,SC                  |                         |
| Connecticut Department of Transportation        | Newington     | CT    | FR           | 46              | TR                      |                            |                |                              |                              |                               |                               | MS                     |                         |
|   |               |       | DR           | 133             |                         |                            |                |                              |                              | X                             | P                             |                        |                         |
|   |               |       | DR           | 42              |                         | X                          |                |                              | X                            | X                             | P <sub>i</sub> [W],[I]        | [SC]                   |                         |
| Connecticut Transit                             | Hartford      | CT    | FR           | 9               |                         | [X]                        |                |                              |                              |                               | P,I                           | [MS]                   |                         |
|   |               |       | DR           | 20              |                         |                            |                |                              |                              | X                             |                               |                        |                         |
|   |               |       | FR           | 33              | TR,DIG                  |                            |                |                              |                              |                               | P,I                           | [SC]                   |                         |
| Connecticut Transit-New Haven                   | New Haven     | CT    | DR           | 27              |                         | [X]                        |                |                              |                              | X                             |                               |                        |                         |
|   |               |       | DR           | 9               |                         |                            |                |                              |                              |                               |                               |                        |                         |
|   |               |       | DR           | 9               |                         |                            |                |                              |                              |                               |                               |                        |                         |
| Connecticut Transit-Stamford                    | Stamford      | CT    | FR           | 1413            |                         |                            |                |                              |                              |                               |                               |                        |                         |
|   |               |       | DR           | 108             | [X]                     | [X]                        |                | [X]                          |                              | [X]                           | P <sub>i</sub> [W],[I]        | [MS],[SC]              | [X]                     |
|   |               |       | HR           | 788             |                         | X                          |                |                              | X                            |                               |                               | [MS],[SC]              |                         |
| Greater Hartford Transit District               | Hartford      | CT    |              |                 |                         |                            |                |                              |                              |                               |                               | MS,SC                  |                         |
|   |               |       |              |                 |                         |                            |                |                              |                              |                               |                               |                        |                         |
|   |               |       |              |                 |                         |                            |                |                              |                              |                               |                               |                        |                         |
| Greater New Haven Transit District              | New Haven     | CT    |              |                 |                         |                            |                |                              |                              |                               |                               |                        |                         |
|   |               |       |              |                 |                         |                            |                |                              |                              |                               |                               |                        |                         |
|   |               |       |              |                 |                         |                            |                |                              |                              |                               |                               |                        |                         |
| Middletown Transit District                     | Middletown    | CT    |              |                 |                         |                            |                |                              |                              |                               |                               |                        |                         |
|   |               |       |              |                 |                         |                            |                |                              |                              |                               |                               |                        |                         |
|   |               |       |              |                 |                         |                            |                |                              |                              |                               |                               |                        |                         |
| Norwalk Transit District/Westport Transit Lines | Norwalk       | CT    |              |                 |                         |                            |                |                              |                              |                               |                               |                        |                         |
|   |               |       |              |                 |                         |                            |                |                              |                              |                               |                               |                        |                         |
|   |               |       |              |                 |                         |                            |                |                              |                              |                               |                               |                        |                         |
| Stamford Dial-A-Ride                            | Stamford      | CT    |              |                 |                         |                            |                |                              |                              |                               |                               |                        |                         |
|   |               |       |              |                 |                         |                            |                |                              |                              |                               |                               |                        |                         |
|   |               |       |              |                 |                         |                            |                |                              |                              |                               |                               |                        |                         |
| Washington Metropolitan Area Transit Authority  | Washington    | DC    |              |                 |                         |                            |                |                              |                              |                               |                               |                        |                         |
|   |               |       |              |                 |                         |                            |                |                              |                              |                               |                               |                        |                         |
|   |               |       |              |                 |                         |                            |                |                              |                              |                               |                               |                        |                         |



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|---|-------------------|-------|----------------|------------------|-------------------------|----------------------------|----------------|------------------------------|------------------------------|-------------------------------|-------------------------------|------------------------|-------------------------|
| Broward County Mass Transit                         | Pompano Beach     | FL    | FR<br>DR       | 232<br>480       | [X]                     | X                          |                | [X]                          | X                            | X                             | P                             |                        |                         |
| Hillsborough Area Regional Transit Authority        | Tampa             | FL    | FR<br>DR       | 210<br>25        | DIG                     | X                          |                |                              |                              | X                             | P, W, I                       | MS                     |                         |
| Jacksonville Transportation Authority               | Jacksonville      | FL    | FR<br>DR       | 179<br>46        | TR, [DIG]               |                            | F, A           | X                            | [X]                          |                               | P, W, I                       | MS                     |                         |
| Central Florida Regional Transit Authority          | Orlando           | FL    | FR<br>DR       | 227<br>193       | [TR], [DIG]             | [X]                        |                | X                            |                              |                               | P, W                          | MS, [SC]               |                         |
| Miami-Dade Transit Authority                        | Miami             | FL    | FR<br>LR<br>HR | 585<br>29<br>136 | TR, [DIG]               | X                          | F, A           | X                            | X                            | X                             | P, [W], I                     | MS                     | [X]                     |
| Pasco County Public Transportation                  | Port Richey       | FL    | FR<br>DR       | 8<br>45          | TR, DIG                 |                            |                |                              |                              | [X]                           | P, W                          | [MS]                   |                         |
| Pinellas Suncoast Transit Authority                 | Clearwater        | FL    | FR<br>DR       | 148<br>150       | TR                      | [X]                        |                | [X]                          | X                            | [X]                           | P, [W], I                     | MS                     |                         |
| Sarasota County Transportation Agency               | Sarasota          | FL    | FR<br>DR       | 39               | TR, DIG                 | [X]                        |                |                              | [X]                          | [X]                           | P, [W], I                     | [MS], [SC]             | [X]                     |
| Tri-County Commuter Rail Authority                  | Fort Lauderdale   | FL    | CR             | 20               |                         | X                          |                |                              |                              |                               | P, W                          |                        |                         |
| Douglas County Rideshare                            | Atlanta           | GA    | DR             | 23               |                         |                            |                |                              |                              |                               | P, W                          |                        |                         |
| Metropolitan Atlanta Rapid Transit Authority        | Atlanta           | GA    | FR<br>HR       | 703<br>238       | [TR], [DIG]             | X                          |                | X                            | X                            | X                             | P, W, I                       | MS, [SC]               | X                       |
| Oahu Transit Services                               | Honolulu          | HI    | FR<br>DR       | 525<br>114       | [DIG]                   | [X]                        |                | [X]                          |                              | [X]                           | P                             |                        | [X]                     |
| Chicago Transit Authority                           | Chicago           | IL    | FR<br>HR       | 1872<br>1100     | [TR], [DIG]             | X                          |                | X                            | [X]                          | [X]                           | P, I                          | MS, SC                 | X                       |
| Northeast Illinois Regional Commuter RR Corporation | Chicago           | IL    | CR             | 942              |                         | X                          |                |                              | X                            | X                             | P, W, I                       | MS, SC                 |                         |
| Cook-DuPage Transportation Company, Inc.            | Chicago           | IL    | DR             | 140              | DIG                     | X                          |                |                              |                              |                               |                               | MS                     |                         |
| PACE Suburban Bus                                   | Arlington Heights | IL    | FR<br>DR       | 650<br>340       | TR, [DIG]               | [X]                        |                | X                            |                              | [X]                           | P, [W], I                     | MS, SC                 | X                       |
|   |                   |       |                |                  |                         |                            |                |                              |                              |                               |                               | [MS], [SC]             |                         |



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| East Chicago Transit                                 | East Chicago | IN    | FR<br>DR       | 5<br>2          | [TR],[DIG]              | X                          |                |                              |                              |                               | W,I                           |                        |                         |
| Hammond Transit System                               | Hammond      | IN    | FR<br>DR       | 12<br>32        |                         | [X]                        |                |                              | [X]                          | [X]                           | P,[W]                         |                        | X                       |
| Indianapolis Public Transportation                   | Indianapolis | IN    | FR<br>DR       | 149<br>49       | TR,[DIG]                | [X]                        |                | X                            | X                            |                               | P                             | MS                     |                         |
| LCEOC, Inc.  | Lake County  | IN    | DR             | 46              | [DIG]                   | [X]                        |                | [X]                          | [X]                          | [X]                           | [P],[W]                       | [MS],[SC]              |                         |
| Northern Indiana Commuter                            | Chesterton   | IN    | CR             | 56              |                         | [X]                        |                |                              |                              |                               | P                             |                        |                         |
| Opportunity Enterprise Inc.                          | Valparaiso   | IN    | DR             | 22              | DIG                     |                            |                |                              |                              |                               |                               |                        |                         |
| Wichita Metropolitan Transit Authority               | Wichita      | KS    | FR<br>DR       | 53<br>17        | TR,[DIG]                | [X]                        |                | [X]                          | [X]                          | [X]                           | P,[I]                         |                        | [X]                     |
| River City Transit Authority                         | Louisville   | KY    | FR<br>DR       | 301<br>78       | DIG                     | X                          |                | X                            |                              |                               | P                             |                        | X                       |
| Capital Transportation Corporation                   | Baton Rouge  | LA    | FR<br>DR       | 52<br>6         |                         |                            |                | [X]                          |                              | [X]                           | P,W,I                         |                        | [X]                     |
| Louisiana Department of Transportation               | Metairie     | LA    | FB             | 5               | TR                      |                            |                |                              |                              |                               |                               |                        | [X]                     |
| Louisiana Transit Company, Incorporated              | Harahan      | LA    | FR             | 28              | DIG                     | [X]                        |                | [X]                          | [X]                          | [X]                           | P,[I]                         | [MS]                   |                         |
| Regional Transit Authority                           | New Orleans  | LA    | FR<br>DR<br>LR | 371<br>24<br>42 | TR,DIG                  | [X]                        |                |                              |                              | [X]                           | P                             |                        |                         |
| St. Bernard Parish Government                        | Chalmette    | LA    | FR<br>DR       | 5<br>1          |                         | [X]                        |                |                              |                              |                               | P,[W],[I]                     |                        |                         |
| Westside Transit Lines                               | New Orleans  | LA    | FR             | 28              | TR,DIG                  | [X]                        |                |                              |                              |                               |                               |                        |                         |
| Greater Attleboro-Taunton Regional Transit Authority | Attleboro    | MA    | FR<br>DR       | 24<br>55        | [DIG]                   | [X]                        |                |                              |                              | [X]                           | P                             | [MS],[SC]              |                         |
|  |              |       |                |                 |                         | [X]                        |                |                              |                              | X                             |                               | [MS],[SC]              |                         |

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|---|--------------|-------|--------------|-----------------|----|----|----|----|----|----|----|-------------------------|----------------------------|----------------|------------------------------|------------------------------|-------------------------------|-------------------------------|------------------------|-------------------------|-----|
|   |              |       |              | FR              | DR | LR | HR | CR | FB | 12 | 45 |                         |                            |                |                              |                              |                               |                               |                        | 35                      | 200 |
| Massachusetts Bay Transportation Authority              | Boston       | MA    | FR           | 1033            |    |    |    |    |    |    |    |                         |                            |                |                              |                              |                               |                               | MS                     | [X]                     |     |
|   |              |       | DR           | 409             |    |    |    |    |    |    |    |                         |                            |                |                              |                              |                               |                               |                        |                         |     |
|   |              |       | LR           | 207             |    |    |    |    |    |    |    |                         |                            |                |                              |                              |                               |                               | MS                     |                         |     |
|   |              |       | HR           | 408             |    |    |    |    |    |    |    |                         |                            |                |                              |                              |                               |                               | MS                     |                         |     |
| Merrimack Valley Regional Transit                       | Haverhill    | MA    | CR           | 363             |    |    |    |    |    |    |    |                         |                            |                |                              |                              |                               |                               |                        |                         |     |
|   |              |       | FB           | 12              |    |    |    |    |    |    |    |                         |                            |                |                              |                              |                               |                               |                        |                         |     |
|   |              |       | FR           | 45              |    |    |    |    |    |    |    |                         |                            |                |                              |                              |                               |                               | [SC]                   |                         |     |
|   |              |       | DR           | 35              |    |    |    |    |    |    |    |                         |                            |                |                              |                              |                               |                               |                        |                         |     |
| Pioneer Valley Transit Authority                        | Springfield  | MA    | FR           | 200             |    |    |    |    |    |    |    |                         |                            |                |                              |                              |                               | MS,[SC]                       |                        |                         |     |
| Frederick County Transit                                | Frederick    | MD    | DR           |                 |    |    |    |    |    |    |    |                         |                            |                |                              |                              |                               |                               |                        |                         |     |
|   |              |       | FR           | 11              |    |    |    |    |    |    |    |                         |                            |                |                              |                              |                               |                               |                        |                         |     |
| Harford County Transportation                           | Baltimore    | MD    | DR           | 22              |    |    |    |    |    |    |    |                         |                            |                |                              |                              |                               |                               |                        |                         |     |
|   |              |       | FR           | 12              |    |    |    |    |    |    |    |                         |                            |                |                              |                              |                               |                               |                        |                         |     |
| Howard Area Transit Service                             | Baltimore    | MD    | DR           | 16              |    |    |    |    |    |    |    |                         |                            |                |                              |                              |                               |                               |                        |                         |     |
|   |              |       | FR           |                 |    |    |    |    |    |    |    |                         |                            |                |                              |                              |                               |                               |                        |                         |     |
| Mass Transit Administration                             | Baltimore    | MD    | FR           | 880             |    |    |    |    |    |    |    |                         |                            |                |                              |                              |                               |                               |                        |                         |     |
|   |              |       | DR           | 20              |    |    |    |    |    |    |    |                         |                            |                |                              |                              |                               |                               |                        |                         |     |
|   |              |       | LR           | 53              |    |    |    |    |    |    |    |                         |                            |                |                              |                              |                               |                               |                        |                         | X   |
|   |              |       | HR           | 100             |    |    |    |    |    |    |    |                         |                            |                |                              |                              |                               |                               |                        |                         |     |
| Montgomery County Transit                               | Rockville    | MD    | FR           | 276             |    |    |    |    |    |    |    |                         |                            |                |                              |                              |                               |                               |                        |                         |     |
| Ann Arbor Transportation Authority                      | Ann Arbor    | MI    | FR           | 84              |    |    |    |    |    |    |    |                         |                            |                |                              |                              |                               |                               |                        |                         |     |
|   |              |       | DR           | 9               |    |    |    |    |    |    |    |                         |                            |                |                              |                              |                               |                               |                        |                         |     |
| Grand Rapids Area Transit Authority                     | Grand Rapids | MI    | FR           | 81              |    |    |    |    |    |    |    |                         |                            |                |                              |                              |                               |                               |                        |                         |     |
|   |              |       | DR           | 56              |    |    |    |    |    |    |    |                         |                            |                |                              |                              |                               |                               |                        |                         | X   |
| Suburban Mobility Authority for Regional Transportation | Detroit      | MI    | FR           | 300             |    |    |    |    |    |    |    |                         |                            |                |                              |                              |                               |                               |                        |                         |     |
|   |              |       | DR           | 100             |    |    |    |    |    |    |    |                         |                            |                |                              |                              |                               |                               |                        |                         |     |
|   |              |       | FR           | 938             |    |    |    |    |    |    |    |                         |                            |                |                              |                              |                               |                               |                        |                         |     |
| Metro Transit   | Minneapolis  | MN    | FR           |                 |    |    |    |    |    |    |    |                         |                            |                |                              |                              |                               |                               |                        |                         |     |
|   |              |       | LR           |                 |    |    |    |    |    |    |    |                         |                            |                |                              |                              |                               |                               |                        |                         |     |

Table 2. APTS Deployment by Transit Agency In the United States' 78 Largest Metropolitan Areas

| Agency                             | City                   | State | Service Type | Vehicles (2000) | Advanced Communications | Automatic Vehicle Location | Vehicle Probes | Automatic Passenger Counters | Vehicle Component Monitoring | Automated Operations Software | Automated Transit Information | Automated Fare Payment | Traffic Signal Priority |
|------------------------------------|------------------------|-------|--------------|-----------------|-------------------------|----------------------------|----------------|------------------------------|------------------------------|-------------------------------|-------------------------------|------------------------|-------------------------|
| Bi-State Development Agency        | St. Louis              | MO    | FR           | 588             |                         |                            |                | X                            |                              | X                             | P, [W]                        | MS, [SC]               |                         |
|                                    |                        |       | DR           | 61              |                         |                            |                |                              |                              |                               |                               |                        |                         |
|                                    |                        |       | LR           | 41              |                         |                            |                | [X]                          |                              |                               |                               | [MS], [SC]             |                         |
| Kansas City Area Transit Authority | Kansas City            | MO    | FR           | 229             | [X]                     | X                          |                | [X]                          | X                            | X                             | P, W                          | MS                     |                         |
|                                    |                        |       | FR           | 53              |                         |                            |                |                              |                              |                               | P, W                          | MS                     |                         |
|                                    |                        |       | DR           | 10              |                         |                            |                |                              |                              |                               |                               | MS                     |                         |
| Capital Area Transit               | Raleigh                | NC    | FR           | 56              |                         |                            |                |                              |                              |                               | P                             | MS                     |                         |
|                                    |                        |       | DR           | 7               | [TR], [DIG]             | [X]                        |                |                              |                              | [X]                           |                               |                        |                         |
|                                    |                        |       | FR           | 200             | TR, DIG                 | [X]                        |                | [X]                          | [X]                          | [X]                           | P, W, I                       | MS                     |                         |
| Charlotte Area Transit System      | Charlotte              | NC    | FR           | 70              |                         | [X]                        |                | [X]                          | [X]                          | X                             |                               |                        |                         |
|                                    |                        |       | FR           | 40              | DIG                     | [X]                        |                | [X]                          | [X]                          | [X]                           |                               | [MS], [SC]             | [X]                     |
|                                    |                        |       | DR           | 23              | [DIG]                   |                            |                |                              |                              | X                             | P                             | MS, SC                 |                         |
| Greensboro Transit Authority       | Greensboro             | NC    | FR           | 18              |                         |                            |                |                              |                              |                               |                               |                        |                         |
|                                    |                        |       | FR           | 16              | TR, DIG                 | [X]                        |                | [X]                          | [X]                          | [X]                           | [P], [W], [I]                 |                        | [X]                     |
|                                    |                        |       | DR           | 6               |                         |                            |                |                              |                              |                               |                               |                        |                         |
| High Point Transit                 | High Point             | NC    | FR           | 27              | TR                      | X                          |                |                              |                              | X                             | P, W, [I]                     | [MS]                   |                         |
|                                    |                        |       | DR           | 5               |                         | X                          |                |                              |                              | X                             |                               | [MS]                   |                         |
|                                    |                        |       | FR           | 58              | TR                      | [X]                        |                |                              |                              | X                             | P, W, I                       | [SC]                   | [X]                     |
| Triangle Transit Authority         | Research Triangle Park | NC    | FR           | 22              |                         | [X]                        |                |                              |                              | X                             |                               | [SC]                   |                         |
|                                    |                        |       | FR           | 131             | DIG                     | [X]                        |                |                              | [X]                          | [X]                           | P                             |                        |                         |
|                                    |                        |       | DR           | 17              |                         | [X]                        |                |                              |                              | [X]                           |                               |                        |                         |
| Winston-Salem Transit Authority    | Winston-Salem          | NC    | FR           | 215             | [TR], [DIG]             | X                          |                | [X]                          | X                            | [X]                           | P, [W], [I]                   | [MS]                   |                         |
|                                    |                        |       | FR           |                 |                         |                            |                |                              |                              |                               | P                             |                        |                         |
|                                    |                        |       | FR           | 2100            |                         | X                          |                | [X]                          | X                            | X                             |                               |                        |                         |
| Omaha Transit Authority            | Omaha                  | NE    | FR           | 85              | TR, [DIG]               |                            |                |                              |                              |                               | P, [W], [I]                   |                        |                         |
|                                    |                        |       | DR           | 40              |                         |                            |                | [X]                          |                              | [X]                           |                               |                        |                         |
|                                    |                        |       | CR           | 745             |                         |                            |                | [X]                          | [X]                          | X                             |                               |                        |                         |
| Academy Lines Incorporated         | Newark                 | NJ    | FR           | 121             | [TR], [DIG]             | X                          |                |                              |                              |                               | P                             |                        |                         |
|                                    |                        |       | FR           |                 |                         |                            |                |                              |                              |                               |                               |                        |                         |
|                                    |                        |       | FR           | 245             | TR, DIG                 | [X]                        |                |                              |                              |                               | P                             | MS, [SC]               |                         |
| Hudson Transit Lines               | Mahwah                 | NJ    | FR           |                 |                         |                            |                |                              |                              |                               |                               |                        |                         |
|                                    |                        |       | FR           |                 |                         |                            |                |                              |                              |                               |                               |                        |                         |
|                                    |                        |       | FR           |                 |                         |                            |                |                              |                              |                               |                               |                        |                         |
| New Jersey Transit Corporation     | Newark                 | NJ    | FR           |                 |                         |                            |                |                              |                              |                               |                               |                        |                         |
|                                    |                        |       | DR           |                 |                         |                            |                |                              |                              |                               |                               |                        |                         |
|                                    |                        |       | CR           |                 |                         |                            |                |                              |                              |                               |                               |                        |                         |
| Port Authority Transit Corporation | Lindenwold             | NJ    | FR           |                 |                         |                            |                |                              |                              |                               |                               |                        |                         |
|                                    |                        |       | FR           |                 |                         |                            |                |                              |                              |                               |                               |                        |                         |
|                                    |                        |       | FR           |                 |                         |                            |                |                              |                              |                               |                               |                        |                         |
| Suburban Transit Corporation       | Dunellen               | NJ    | FR           |                 |                         |                            |                |                              |                              |                               |                               |                        |                         |
|                                    |                        |       | FR           |                 |                         |                            |                |                              |                              |                               |                               |                        |                         |
|                                    |                        |       | FR           |                 |                         |                            |                |                              |                              |                               |                               |                        |                         |



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|--|--------------------|-------|------------------------------|-----------------|-------------------------|----------------------------|----------------|------------------------------|------------------------------|-------------------------------|-------------------------------|------------------------|-------------------------|
| Sun Tran   | Albuquerque        | NM    | FR 141<br>DR 40              | TR, DIG         | [X]                     | X                          |                | [X]                          | X                            | [X]                           | P                             | [SC]<br>[SC]           |                         |
| Regional Transportation Commission/Citizens Area Transit | Las Vegas          | NV    | FR 297<br>DR 120             | [TR], [DIG]     | [X]                     | [X]                        |                | [X]                          | [X]                          | [X]                           | [P], [W]                      |                        | [X]                     |
| Blue Bird Coach Lines/Niagara Scenic Bus Lines           | No. Tonawanda      | NY    | FR 1                         |                 |                         |                            |                |                              |                              |                               |                               |                        |                         |
| Capital District Transit Authority                       | Albany             | NY    | FR 235<br>DR 25              | [X]             | [X]                     | [X]                        |                | [X]                          | [X]                          | [X]                           | P, [W], [I]                   | MS<br>MS               | [X]                     |
| Central New York Regional Transit Authority              | Syracuse           | NY    | FR 182<br>DR 22              |                 |                         | [X]                        |                | [X]                          | [X]                          | [X]                           | P, [W]                        | MS<br>MS               |                         |
| Clarkstown Mini-Trans                                    | Clarkstown         | NY    | FR 10                        | TR              |                         |                            |                |                              |                              |                               | P, W                          |                        |                         |
| GTJC   | Jamaica            | NY    | FR 724                       | TR, DIG         | [X]                     | [X]                        |                | [X]                          | [X]                          | [X]                           | P                             | MS                     |                         |
| Huntington Area Rapid Transit                            | Huntington Station | NY    | FR 12<br>DR 7                |                 |                         | [X]                        |                |                              |                              | [X]                           | P                             |                        |                         |
| Liberty Lines Express, Incorporated                      | Yonkers            | NY    | FR 86                        | TR, DIG         | [X]                     |                            |                |                              |                              |                               | P, [I]                        | MS                     |                         |
| Long Beach City  | Long Beach City    | NY    | FR 12<br>DR 2                |                 |                         |                            |                |                              |                              |                               | [P]                           |                        |                         |
| Long Island Bus  | Garden City        | NY    | FR 324<br>DR 60              | TR, DIG         | [X]                     | X                          |                | [X]                          | X                            | X                             | P, [W], [I]                   | MS                     |                         |
| Metro-North Railroad MTA                                 | New York           | NY    | CR 900                       |                 |                         | [X]                        |                |                              | X                            | X                             | P, W, [I]                     | [MS]                   |                         |
| Monsey New Square Trails Corporation                     | Spring Valley      | NY    | FR 42                        | TR              |                         |                            |                |                              |                              |                               | P                             |                        |                         |
| New York Bus Service                                     | Bronx              | NY    | FR 137                       | TR, DIG         |                         |                            |                |                              |                              |                               | [P], [I]                      | MS                     |                         |
| New York City DOT  | New York           | NY    | FR 1288<br>FB 7              | TR, DIG         | [X]                     |                            |                |                              |                              | X                             | P                             | MS<br>MS               | [X]                     |
| New York City Transit Authority                          | New York           | NY    | FR 4172<br>DR 175<br>HR 5774 | TR              |                         | [X]                        |                |                              |                              | [X]                           | P, W                          | MS                     |                         |
| Niagara Frontier Transportation Authority                | Buffalo            | NY    | FR 322<br>DR 18<br>LR 27     | TR              |                         | X<br>X                     |                |                              | X<br>X                       |                               | P                             |                        |                         |



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| Putnam County Transit  | Carmel        | NY    | FR<br>DR             | 8<br>2                 |                         |                            |                |                              |                              |                               | P                             |  |                         |
| Queens Surface Corporation                                     | Flushing      | NY    | FR                   | 337                    | TR                      |                            |                |                              |                              |                               | P                             | MS   |                         |
| Regional Transit Service Incorporated & Lift Line Incorporated | Rochester     | NY    | FR<br>DR             | 244<br>36              | [X]                     | [X]<br>[X]                 |                |                              | [X]<br>[X]                   | [X]<br>[X]                    | P                             | MS   | [X]                     |
| Rockland Coaches Incorporated                                  | Pomona        | NY    | FR                   | 135                    | TR                      |                            |                |                              |                              |                               | P                             |  |                         |
| Suffolk County Department of Public Works                      | Yaphank       | NY    | FR<br>DR             | 143<br>28              | [D/G]                   | [X]<br>[X]                 |                |                              | [X]<br>[X]                   |                               | P                             | [MS]<br>[MS]                               |                         |
| Village of Spring Valley Bus                                   | Spring Valley | NY    | FR                   | 4                      |                         |                            |                | [X]                          | [X]                          | [X]                           | P,W,[I]                       | [MS]                                       |                         |
| Westchester County Department of Transportation                | White Plains  | NY    | FR<br>DR             | 354<br>56              | [TR],[D/G]              | [X]<br>[X]                 |                | [X]<br>[X]                   | [X]<br>[X]                   |                               | P,W,I                         |  |                         |
| Campus Bus Service   | Kent          | OH    | FR<br>DR             | 16<br>6                |                         |                            |                |                              |                              |                               | P,W,I                         |  |                         |
| Central Ohio Transit Authority                                 | Columbus      | OH    | FR<br>DR             | 348<br>45              | TR                      | X<br>[X]                   |                | X                            | [X]<br>[X]                   | X<br>X                        | P,[W],[I]                     | MS,[SC]<br>[SC]                            | [X]                     |
| Greater Cleveland Regional Transit Authority                   | Cleveland     | OH    | FR<br>DR<br>LR<br>HR | 768<br>107<br>48<br>60 | [TR]                    | [X]<br>[X]<br>[X]<br>[X]   |                | [X]                          | X<br>[X]<br>[X]<br>[X]       | [X]<br>[X]<br>[X]<br>[X]      | P,W,[I]                       | MS,[SC]<br>[MS],[SC]<br>MS,[SC]<br>MS,[SC] | [X]<br><br>[X]          |
| Laketran   | Grand River   | OH    | FR<br>DR             | 30<br>65               |                         | [X]<br>[X]                 |                |                              |                              | [X]<br>[X]                    | P                             |  |                         |
| Lorain County Transit  | Lorain        | OH    | FR<br>DR             | 17<br>16               |                         |                            |                |                              |                              |                               | P,W                           | [MS],[SC]<br>[MS],[SC]                     |                         |
| Metro Regional Transit Authority                               | Akron         | OH    | FR<br>DR             | 152<br>145             |                         | [X]<br>X                   |                | [X]<br>[X]                   | [X]<br>[X]                   | [X]<br>X                      | P,[W],[I]                     | MS<br>MS                                   |                         |
| Miami Valley Regional Transit Authority                        | Dayton        | OH    | FR<br>DR             | 238<br>60              |                         | X<br>X                     |                | [X]                          | X<br>X                       | X<br>X                        | P,[W]                         | MS   |                         |
| Southwest Ohio Regional Transit Authority                      | Cincinnati    | OH    | FR<br>DR             | 433<br>51              | TR,[D/G]                | X<br>X                     | F              |                              | X<br>X                       | X<br>X                        | P,[W],[I]                     | MS   |                         |

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| Toledo Area Regional Transit Authority                    | Toledo                        | OH    | FR           | DR | 167             | 17  | DIG                     |                            |                |                              |                              |                               | P, [W], [I]                   |                        |                         |
| Western Reserve Transit Authority                         | Youngstown                    | OH    | FR           | DR | 44              | 5   | [TR], [DIG]             | X                          |                |                              | X                            | X                             |                               |                        |                         |
| Central Oklahoma Transit                                  | Oklahoma City                 | OK    | FR           | DR | 90              | 16  | [TR]                    | [X]                        |                |                              |                              | [X]                           | P, [W], [I]                   | MS                     |                         |
| Metropolitan Tulsa Transit Authority                      | Tulsa                         | OK    | FR           | DR | 100             | 30  | TR, DIG                 |                            |                |                              |                              |                               | P                             | [MS]                   |                         |
| Tri-County Metropolitan Transportation District of Oregon | Portland                      | OR    | FR           | DR | 681             | 176 | TR                      | X                          | X              | X                            |                              | X                             | P, W, [I]                     | MS                     | X                       |
| Access Transportation Systems Incorporated                | Pittsburgh                    | PA    | FR           | DR | 467             |     |                         | X                          |                |                              |                              | X                             | [P]                           |                        | X                       |
| Beaver County Transit Authority                           | Rochester                     | PA    | FR           | DR | 14              | 25  |                         | X                          |                | [X]                          | [X]                          | [X]                           | P, [W], [I]                   | MS, [SC]               |                         |
| Cumberland-Dauphin-Harrisburg                             | Harrisburg, Lebanon, Carlisle | PA    | FR           | DR | 69              | 5   |                         |                            |                |                              |                              |                               | P, W, [I]                     |                        |                         |
| G & C Bus Company Incorporated                            | Washington                    | PA    | FR           | DR | 4               | 19  |                         |                            |                |                              |                              | [X]                           | [P], [I]                      |                        |                         |
| Lackawanna County Transit System                          | Scranton                      | PA    | FR           | DR | 29              | 4   |                         | X                          |                |                              |                              | X                             | P, W                          |                        |                         |
| Lehigh and Northampton                                    | Allentown                     | PA    | FR           | DR | 75              | 98  |                         | [X]                        |                |                              |                              |                               | P, I                          | MS                     |                         |
| Port Authority of Allegheny County                        | Pittsburgh                    | PA    | FR           | DR | 940             | 170 |                         | [X]                        |                |                              |                              | [X]                           | P, W, I                       | [MS]                   | [X]                     |
| Southeastern Pennsylvania Transportation Authority        | Philadelphia                  | PA    | FR           | DR | 1250            | 224 | [TR]                    | X                          |                | [X]                          | X                            |                               | P, W, I                       | MS                     |                         |
|   |                               |       | LR           | HR | 379             |     |                         |                            |                |                              |                              |                               |                               | MS                     | X                       |
|   |                               |       | CR           |    | 349             |     |                         |                            |                |                              |                              |                               |                               | MS                     |                         |

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| Puerto Rico Highway and Transportation Authority | San Juan      | PR    | FR<br>HR             | 30                     | DIG                     | X                          |                |                              | X                            | X                             | P,W,I,I                       | [MS]<br>[MS]             |                         |
| Rhode Island Public Transit Authority            | Providence    | RI    | FR<br>DR<br>FB       | 236<br>104<br>1        | [TR],[DIG]              | X                          |                | X                            | X                            | X                             | P,W,I,I                       | [SC]<br>[SC]<br>[SC]     | X                       |
| Charleston Transit Administration                | Charleston    | SC    | FR<br>DR             | 59<br>17               | TR,[DIG]                |                            |                |                              | X                            |                               | P,W,I                         | MS,[SC]<br>[MS],[SC]     |                         |
| Greenville Transit Authority                     | Greenville    | SC    | FR                   | 11                     | [DIG]                   |                            |                |                              |                              |                               | P,W,I,I                       |                          |                         |
| Spartanburg Area Regional Transit Agency         | Spartanburg   | SC    | FR                   | 9                      | DIG                     |                            |                |                              |                              |                               | P                             |                          |                         |
| Knoxville Transportation Authority               | Knoxville     | TN    | FR<br>DR             | 88<br>12               | TR,DIG                  |                            |                | X                            | X                            | X                             | P,W,I,I                       | MS,[SC]<br>MS            |                         |
| Memphis Area Transit Authority                   | Memphis       | TN    | FR<br>DR<br>LR       | 234<br>60<br>20        |                         | X                          |                | X                            | X                            |                               | P                             | [SC]                     |                         |
| Metropolitan Transit Authority                   | Nashville     | TN    | FR<br>DR             | 141<br>35              | [DIG]                   |                            |                |                              |                              | X                             |                               | [MS]<br>[MS]             |                         |
| Capital Metropolitan Transportation Authority    | Austin        | TX    | FR<br>DR             | 389                    | [TR],[DIG]              | X                          |                | X                            | X                            | X                             | P,I                           | [MS]<br>[MS]             |                         |
| Dallas Area Rapid Transit                        | Dallas        | TX    | FR<br>DR<br>LR<br>CR | 862<br>190<br>54<br>27 | TR                      | X                          |                | X                            |                              | X                             | P,I                           | [SC]<br><br>[SC]<br>[SC] |                         |
| Denton City Manager                              | Denton        | TX    | FR<br>DR             | 4<br>5                 | TR,[DIG]                |                            |                |                              |                              |                               | P                             |                          |                         |
| Fort Worth Transportation Authority              | Fort Worth    | TX    | FR<br>DR<br>CR       | 80<br>100<br>14        | [TR],[DIG]              | X                          |                | X                            | X                            | X                             | P,W,I,I                       | [SC]<br>[SC]<br>[SC]     | X<br>X                  |
| Grand Prairie City                               | Grand Prairie | TX    | DR                   |                        | TR,DIG                  | X                          |                | X                            | X                            | X                             |                               |                          |                         |
| Lewisville Dial-A-Ride                           | Lewisville    | TX    | DR                   | 5                      | TR,DIG                  |                            |                |                              |                              | X                             |                               |                          |                         |



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| Metro Transit Authority                                   | Houston        | TX    | FR           | DR | 1336            | 118 | TR, DIG                 | [X]                        |                | [X]                          | X                            | X                             | P                             | MS                     | [X]                     |
|   |                |       | FR           | DR | 159             | 54  | TR, [DIG]               | [X]                        |                | [X]                          |                              | [X]                           | [P], [W], [I]                 | [SC]                   |                         |
| Sun Metro   | El Paso        | TX    | FR           | DR | 529             | 231 | TR, [DIG]               | X                          |                | [X]                          |                              | [X]                           | P, W, I                       | [MS]                   |                         |
|   |                |       | FR           | DR | 530             | 90  |                         | [X]                        |                |                              |                              | X                             | P, W, [I]                     |                        | X                       |
| VIA Metropolitan Transit                                  | San Antonio    | TX    | FR           | DR | 153             | 13  | TR                      | [X]                        |                | [X]                          |                              | X                             | P, W                          | [SC]                   | [X]                     |
|   |                |       | FR           | DR | 181             | 72  |                         |                            |                |                              |                              |                               | [P], [W]                      | MS                     |                         |
| Utah Transit Authority                                    | Salt Lake City | UT    | FR           | DR | 378             | 96  | [DIG]                   | [X]                        |                | [X]                          |                              | [X]                           | P, [W], [I]                   | MS                     |                         |
|   |                |       | FR           | DR | 3               | 80  |                         |                            |                |                              |                              |                               | P, [I]                        |                        |                         |
| Fairfax Connector Bus System                              | Fairfax        | VA    | FR           | DR | 9               | 2   | [DIG]                   |                            |                |                              |                              |                               |                               | [SC]                   |                         |
|   |                |       | FR           | DR | 73              | 109 | TR, DIG                 | X                          |                |                              |                              | [X]                           | P                             | [SC]                   |                         |
| Greater Richmond Transit Company                          | Richmond       | VA    | FR           | DR | 41              | 15  | TR, DIG                 | [X]                        |                | [X]                          |                              | [X]                           | P                             |                        | [X]                     |
|   |                |       | FR           | DR | 53              |     | TR                      |                            |                |                              |                              |                               |                               | [MS], [SC]             |                         |
| Hampton Roads Transit                                     | Norfolk        | VA    | FR           | DR | 1213            |     | [TR]                    | X                          |                | X                            |                              | X                             | P, W                          | MS, [SC]               | X                       |
|   |                |       | FR           | DR | 95              | 46  | TR, [DIG]               | X                          |                |                              |                              |                               | P, [W], [I]                   | [SC]                   | X                       |
| Northern Virginia Transportation Commission               | Arlington      | VA    | FR           | DR | 3               | 2   |                         |                            |                |                              |                              |                               |                               | [SC]                   |                         |
|   |                |       | FR           | DR |                 |     |                         |                            |                |                              |                              |                               |                               |                        |                         |
| Petersburg Area Transit                                   | Petersburg     | VA    | FR           | DR |                 |     |                         |                            |                |                              |                              |                               |                               |                        |                         |
|   |                |       | FR           | DR |                 |     |                         |                            |                |                              |                              |                               |                               |                        |                         |
| Potomac and Rappahannock Transportation Commission        | Woodbridge     | VA    | FR           | DR |                 |     |                         |                            |                |                              |                              |                               |                               |                        |                         |
|   |                |       | FR           | DR |                 |     |                         |                            |                |                              |                              |                               |                               |                        |                         |
| Clark County Public Transportation Benefit Area Authority | Vancouver      | WA    | FR           | DR |                 |     |                         |                            |                |                              |                              |                               |                               |                        |                         |
|   |                |       | FR           | DR |                 |     |                         |                            |                |                              |                              |                               |                               |                        |                         |
| Everett Transit   | Everett        | WA    | FR           | DR |                 |     |                         |                            |                |                              |                              |                               |                               |                        |                         |
|   |                |       | FR           | DR |                 |     |                         |                            |                |                              |                              |                               |                               |                        |                         |
| King County Metro   | Seattle        | WA    | FR           | DR |                 |     |                         |                            |                |                              |                              |                               |                               |                        |                         |
|   |                |       | FR           | DR |                 |     |                         |                            |                |                              |                              |                               |                               |                        |                         |
| Kitsap Transit  | Bremerton      | WA    | FR           | DR |                 |     |                         |                            |                |                              |                              |                               |                               |                        |                         |
|   |                |       | FR           | DR |                 |     |                         |                            |                |                              |                              |                               |                               |                        |                         |
| Pierce County Ferry Operations                            | Tacoma         | WA    | FR           | DR |                 |     |                         |                            |                |                              |                              |                               |                               |                        |                         |
|   |                |       | FR           | DR |                 |     |                         |                            |                |                              |                              |                               |                               |                        |                         |



Table 2. APTS Deployment by Transit Agency in the United States' 78 Largest Metropolitan Areas

| Agency                                 | City      | State | Service Type |    | Vehicles (2000) |     | Advanced Communications | Automatic Vehicle Location | Vehicle Probes | Automatic Passenger Counters | Vehicle Component Monitoring | Automated Operations Software | Automated Transit Information | Automated Fare Payment | Traffic Signal Priority |
|--|-----------|-------|--------------|----|-----------------|-----|-------------------------|----------------------------|----------------|------------------------------|------------------------------|-------------------------------|-------------------------------|------------------------|-------------------------|
| Pierce Transit                         | Tacoma    | WA    | FR           | DR | 230             | 106 | [DIG]                   | [X]                        |                | [X]                          |                              | X                             | P, [W], [I]                   | [SC]                   | [X]                     |
| Seattle Monorail Transit               | Seattle   | WA    | CR           |    | 8               |     | [DIG]                   |                            |                |                              |                              |                               | P                             |                        |                         |
| Snohomish County Public Transportation | Everett   | WA    | FR           | DR | 291             | 51  | DIG                     | [X]                        |                |                              |                              | [X]                           | P, W, [I]                     | MS, [SC]               | [X]                     |
|  | Mukilteo  | WA    | DR           |    | 52              |     |                         | [X]                        |                |                              |                              | X                             | P, W                          |                        | X                       |
| Snohomish County Senior Services       | Seattle   | WA    | FB           |    | 29              |     | TR                      | X                          |                |                              | X                            | X                             | P                             | [SC]                   |                         |
| Washington State Ferries               | Racine    | WI    | FR           | DR | 42              | 17  | DIG                     | [X]                        |                |                              |                              | [X]                           | P                             |                        |                         |
| Belle Urban System                     | Kenosha   | WI    | FR           | DR | 51              | 3   |                         | [X]                        |                |                              |                              | [X]                           | P                             |                        |                         |
| Kenosha Transit                        | Milwaukee | WI    | FR           | DR | 555             | 476 | TR                      | X                          | [A]            | X                            |                              | X                             | P, [W], [I]                   |                        | [X]                     |
| Milwaukee County Transit System        | Waukesha  | WI    | FR           | DR | 23              | 3   | [TR]                    | [X]                        |                |                              |                              | [X]                           | P, [W]                        | MS                     |                         |
| Waukesha City Metro Transit            |           |       |              |    |                 |     |                         |                            |                |                              |                              |                               |                               | [MS]                   |                         |



### **SECTION 3. APTS DEPLOYMENT BY TRANSIT AGENCY OUTSIDE OF THE 78 LARGEST METROPOLITAN AREAS IN THE UNITED STATES**

Table 3 presents the information collected by the Volpe National Transportation Systems Center for all known transit agencies not covered by the Oak Ridge National Laboratory/SAIC survey effort. A total of 351 transit agencies were surveyed by the Volpe Center. All of these agencies which have installed, or are planning to install, any of the APTS elements are listed in the Table. As indicated in the Legend, entries enclosed by brackets signify elements either in the implementation or planning stage and are expected to be operational by the year 2005. All other entries indicate operational elements.

The agencies are arranged alphabetically, first by state and then by agency name. Table 3 also lists the number of vehicles operated by each agency (directly or by contract) in each service type. However, the APTS element is not necessarily installed on every vehicle in the service type for which it is operational or planned.

Table 3 includes APTS elements that are not covered in Table 2 for reasons previously mentioned.

Table 3. APTS Deployment by Transit Agency Outside the United States' 78 Largest Metropolitan Areas

| Agency  | City          | State | Service Type | Vehicles (2000) | Advanced Communications | Automatic Vehicle Location | Vehicle Probes | Automatic Passenger Counters | Vehicle Component Monitoring | Automated Operations Software | Automated Transit Information | Multi-Modal Traveler Information | Automated Fare Payment | Multi-Carrier Fare Integration | Mobility Manager | Transportation Management Center | Traffic Signal Priority | ITS Integration | Surveillance Cameras | Silent Alarms | Covert Microphones |
|---|---------------|-------|--------------|-----------------|-------------------------|----------------------------|----------------|------------------------------|------------------------------|-------------------------------|-------------------------------|----------------------------------|------------------------|--------------------------------|------------------|----------------------------------|-------------------------|-----------------|----------------------|---------------|--------------------|
| Anchorage Public Transportation                 | Anchorage     | AK    | FR<br>DR     | 54<br>50        |                         | [GPS]                      |                |                              | X                            | [X]                           | P, W<br>P                     |                                  |                        |                                |                  |                                  | [X]                     | X               |                      |               |                    |
| MACS and VANTRAN                                | Fairbanks     | AK    | FR<br>DR     | 10<br>9         |                         |                            |                |                              |                              |                               | P<br>P                        |                                  |                        |                                | [X]              |                                  | [X]                     |                 |                      |               |                    |
| Capital Area Transit                            | Montgomery    | AL    | FR<br>DR     | 6<br>18         | TR, DIG<br>TR, DIG      |                            |                |                              |                              | X                             |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| City of Huntsville Department of Transportation | Huntsville    | AL    | FR<br>DR     | 11<br>12        | TR, DIG<br>TR, DIG      |                            |                |                              |                              | X                             | P<br>P                        |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Gadsden Transportation Services                 | Gadsden       | AL    | FR<br>DR     | 3<br>9          | TR, DIG<br>TR, DIG      |                            |                |                              |                              | X                             |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               | X                  |
| Metro Transit                                   | Mobile        | AL    | FR<br>DR     | 31<br>4         | TR, DIG<br>TR, DIG      |                            |                |                              |                              | X                             | P, I<br>P                     |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Northwest Alabama Council of Local Governments  | Muscle Shoals | AL    | DR           | 58              |                         |                            |                |                              |                              |                               | P                             |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Tuscaloosa County Parking and Transit           | Tuscaloosa    | AL    | FR<br>DR     | 15<br>7         | TR, DIG<br>TR, DIG      |                            |                |                              |                              | [X]                           |                               |                                  |                        |                                | [X]              |                                  |                         |                 |                      |               |                    |
| Wiregrass Transit Authority                     | Dothan        | AL    | DR           | 20              |                         |                            |                |                              |                              | [X]                           |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Fort Smith Public Transit                       | Fort Smith    | AR    | FR<br>DR     | 5<br>5          |                         | OTR                        |                |                              |                              | X<br>X                        |                               |                                  |                        |                                |                  |                                  |                         |                 | X                    |               |                    |
| Intra City Transit                              | Hot Springs   | AR    | FR<br>DR     | 11<br>6         |                         |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         | X               |                      |               |                    |
| Pine Bluff Transit                              | Pine Bluff    | AR    | FR<br>DR     | 13<br>2         | TR, DIG<br>TR, DIG      |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 | [X]                  |               |                    |
| Maricopa County Human Services Department       | Phoenix       | AZ    | DR           | 70              | TR, DIG                 |                            |                |                              |                              | [X]                           | [P]                           |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Benicia Transit                                 | Martinez      | CA    | FR<br>DR     | 7<br>3          |                         |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Camarillo Area Transit                          | Camarillo     | CA    | FR<br>DR     | 2<br>2          | TR, DIG<br>TR, DIG      | GPS                        |                | X                            |                              | X<br>X                        | P<br>P                        | X                                | SC                     | X                              |                  | X                                |                         |                 |                      |               |                    |
| Chico Area Transit System                       | Chico         | CA    | FR<br>DR     | 15<br>8         |                         |                            |                | X                            |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 | [X]                  |               |                    |



Table 3. APTS Deployment by Transit Agency Outside the United States' 78 Largest Metropolitan Areas

| Agency  | City           | State | Service Type | Vehicles (2000) | Advanced Communications  | Automatic Vehicle Location | Vehicle Probes | Automatic Passenger Counters | Vehicle Component Monitoring | Automated Operations Software | Automated Transit Information | Multi-Modal Traveler Information | Automated Fare Payment | Multi-Carrier Fare Integration | Mobility Manager | Transportation Management Center | Traffic Signal Priority | ITS Integration | Surveillance Cameras | Silent Alarms | Covert Microphones |
|---|----------------|-------|--------------|-----------------|--------------------------|----------------------------|----------------|------------------------------|------------------------------|-------------------------------|-------------------------------|----------------------------------|------------------------|--------------------------------|------------------|----------------------------------|-------------------------|-----------------|----------------------|---------------|--------------------|
| City of Glendale  | Glendale       | CA    | FR<br>DR     | 35<br>4         |                          | GPS                        |                |                              |                              | X                             |                               |                                  | [MS],[SC]              | X                              |                  |                                  | [X]                     | X               |                      |               |                    |
| City of Riverside Special Transportation                | Riverside      | CA    | DR           | 22              | TR,[DIG]                 | GPS                        |                |                              |                              | [X]                           |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| City of Roseville Transit                               | Roseville      | CA    | FR<br>DR     | 12<br>10        | TR,DIG<br>TR,DIG         |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Eastern Contra Costa Transit Authority                  | Antioch        | CA    | FR<br>DR     | 46<br>16        | DIG<br>DIG               | [GPS]                      |                |                              |                              | [X]                           | P                             | [X]                              |                        |                                |                  | [X]                              |                         |                 | X                    | X             |                    |
| Emery-Go-Round  | Oakland        | CA    | FR           | 6               |                          | GPS                        |                |                              |                              | X                             |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Foothill Transit  | West Covina    | CA    | FR<br>DR     | 306<br>9        | [TR],[DIG]<br>[TR],[DIG] | [GPS]                      |                |                              |                              | [X]                           | P,W,I<br>P                    | X                                | MS                     |                                |                  |                                  | X                       |                 |                      |               |                    |
| Golden Gate Bridge, Highway and Transportation District | San Francisco  | CA    | FR<br>FB     | 280<br>5        | DIG<br>DIG               | GPS                        |                |                              |                              | [X]                           | P                             |                                  |                        | X                              |                  |                                  |                         |                 | X                    |               |                    |
| Healdsburg Municipal Transit                            | Healdsburg     | CA    | FR<br>DR     | 1<br>1          |                          |                            |                |                              |                              |                               |                               |                                  |                        |                                | X                |                                  |                         |                 |                      |               |                    |
| Inteltran   | Oakland        | CA    | DR           | 170             | DIG                      |                            |                |                              |                              | [X]                           |                               |                                  |                        |                                | X                |                                  |                         | X               |                      |               |                    |
| Laidlaw Transit Services                                | El Monte       | CA    | FR           | 130             |                          |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 | X                    |               |                    |
| Lompoc Transit  | Lompoc         | CA    | FR<br>DR     | 7<br>1          |                          |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         | X               |                      |               |                    |
| Los Angeles County Metropolitan Transp. Auth.           | Los Angeles    | CA    | FR<br>DR     | 2400<br>92      |                          | GPS                        | A,F            | [X]                          | X                            | X                             |                               | [X]                              | [MS],[SC]              |                                | [X]              |                                  | X                       | [X]             |                      | X             |                    |
| Mendocino Transit Authority                             | Ukiah          | CA    | FR<br>DR     | 17              |                          |                            |                |                              | X                            |                               | P                             |                                  |                        |                                |                  |                                  |                         | X               | [X]                  |               |                    |
| Modesto Area Express                                    | Modesto        | CA    | FR<br>DR     | 40<br>10        |                          | [GPS]                      |                |                              |                              | [X]                           | P,W,I<br>P                    |                                  |                        |                                |                  |                                  |                         | X               | X                    |               |                    |
| Omnitrans   | San Bernardino | CA    | FR<br>DR     | 141<br>72       | [DIG]<br>[DIG]           | [GPS]                      |                | X                            |                              | [X]                           | P                             | X                                |                        |                                |                  |                                  |                         |                 | X                    |               |                    |
| Outreach and Escort Inc.                                | San Jose       | CA    | DR           | 250             |                          |                            |                |                              |                              | X                             | P                             | [X]                              |                        |                                |                  |                                  | [X]                     |                 |                      |               |                    |
| Petaluma Transit  | Petaluma       | CA    | DR           | 5               |                          | GPS                        | A,F            |                              | [X]                          | X                             | P                             | [X]                              |                        |                                |                  |                                  | X                       |                 |                      |               |                    |
| Redding Area Bus Authority                              | Redding        | CA    | FR<br>DR     | 18<br>20        | TR,DIG<br>TR,DIG         |                            |                |                              |                              |                               | P,W                           |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Riverside Transit Agency                                | Riverside      | CA    | FR<br>DR     | 120<br>80       | TR<br>TR                 |                            |                |                              |                              | X                             | P                             | X                                |                        | X                              |                  |                                  |                         | X               |                      | X             |                    |

Table 3. APTS Deployment by Transit Agency Outside the United States' 78 Largest Metropolitan Areas

| Agency   | City             | State | Service Type | Vehicles (2000) | Advanced Communications | Automatic Vehicle Location | Vehicle Probes | Automatic Passenger Counters | Vehicle Component Monitoring | Automated Operations Software | Automated Transit Information | Multi-Modal Traveler Information | Automated Fare Payment | Multi-Carrier Fare Integration | Mobility Manager | Transportation Management Center | Traffic Signal Priority | ITS Integration | Surveillance Cameras | Silent Alarms | Covert Microphones |
|--|------------------|-------|--------------|-----------------|-------------------------|----------------------------|----------------|------------------------------|------------------------------|-------------------------------|-------------------------------|----------------------------------|------------------------|--------------------------------|------------------|----------------------------------|-------------------------|-----------------|----------------------|---------------|--------------------|
| San Joaquin Regional Transit District          | Stockton         | CA    | FR<br>DR     | 98<br>41        | DIG<br>DIG              | GPS                        |                | X                            | X                            | X                             | P, I                          |                                  | MS                     |                                | X                |                                  |                         |                 |                      | X             | X                  |
| San Luis Obispo Regional Transit Authority     | San Luis Obispo  | CA    | FR<br>DR     | 20<br>9         |                         |                            |                |                              |                              | X                             | P                             |                                  |                        |                                |                  |                                  | X                       |                 |                      | X             |                    |
| Santa Barbara Metropolitan Transit District    | Santa Barbara    | CA    | FR           | 82              | TR                      |                            |                |                              |                              | X                             | P, W, I                       |                                  | MS                     |                                |                  |                                  | [X]                     | X               |                      |               |                    |
| The Bus-Merced County Transit                  | Merced           | CA    | FR<br>DR     | 18<br>28        | TR<br>TR                | [GPS]                      |                |                              |                              | [X]                           | [P], [W]                      | [X]                              |                        |                                |                  |                                  |                         |                 | [X]                  |               |                    |
| Thousand Oaks Transit                          | Thousand Oaks    | CA    | FR<br>DR     | 5<br>3          | TR, DIG<br>TR, DIG      | GPS                        |                | X                            | [X]                          | X                             | P                             | X                                | SC                     | X                              |                  | X                                |                         | X               |                      |               |                    |
| Unitrans                                       | Davis            | CA    | FR<br>DR     | 41<br>3         |                         |                            |                |                              |                              |                               | P                             | X                                |                        |                                |                  |                                  |                         | X               |                      |               |                    |
| Ventura Intercity Service Transit              | Ventura          | CA    | FR<br>DR     | 15<br>9         | TR, DIG<br>TR, DIG      | GPS                        |                | X                            |                              | X                             | P, W                          | X                                | SC                     | X                              |                  | X                                |                         | X               |                      |               |                    |
| Yolo County Transportation District            | Woodland         | CA    | FR<br>DR     | 22<br>10        | TR<br>TR                | [GPS]                      |                |                              |                              | [X]                           | P, W                          | [X]                              | MS                     | X                              |                  |                                  | [X]                     |                 | [X]                  |               |                    |
| Yuba-Sutter Transit Authority                  | Marysville       | CA    | FR<br>DR     | 13<br>14        | TR<br>TR                |                            |                |                              |                              | [X]                           | P                             | X                                |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Avon/Beaver Creek Transit                      | Avon             | CO    | FR<br>DR     | 52<br>28        | [TR], [DIG]<br>[TR]     |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 | X                    |               |                    |
| Eagle County Regional Transportation Authority | Avon             | CO    | FR<br>DR     | 2               | [TR]                    |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Mesa County                                    | Grand Junction   | CO    | FR<br>DR     | 27<br>4         | TR, DIG<br>TR, DIG      | [GPS]                      |                |                              |                              | [X]                           | [P]                           |                                  | [MS]                   |                                |                  |                                  |                         |                 |                      |               |                    |
| Pueblo Transit                                 | Pueblo           | CO    | FR<br>DR     | 16<br>6         |                         |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Springs Transit                                | Colorado Springs | CO    | FR           | 50              | TR, DIG                 | [GPS]                      | [A], [F]       |                              | [X]                          | [X]                           | P                             |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Transfort                                      | Fort Collins     | CO    | FR<br>DR     | 24<br>16        | TR, DIG<br>TR, DIG      | [GPS]                      |                |                              |                              | [X]                           | P, W, I                       | [X]                              |                        |                                |                  |                                  | [X]                     |                 |                      |               |                    |
| Connecticut Limousine                          | Milford          | CT    | DR           | 150             | [TR], [DIG]             | [GPS]                      |                |                              |                              | [X]                           | P                             |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Cross Sound Ferry Services Inc.                | New London       | CT    | FB           | 8               | TR, DIG                 | GPS                        |                |                              | X                            | X                             | P                             |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |



Table 3. APTS Deployment by Transit Agency Outside the United States' 78 Largest Metropolitan Areas

| Agency  | City             | State | Service Type | Vehicles (2000) | Advanced Communications | Automatic Vehicle Location | Vehicle Probes | Automatic Passenger Counters | Vehicle Component Monitoring | Automated Operations Software | Automated Transit Information | Multi-Modal Traveler Information | Automated Fare Payment | Multi-Carrier Fare Integration | Mobility Manager | Transportation Management Center | Traffic Signal Priority | ITS Integration | Surveillance Cameras | Silent Alarms | Covert Microphones |
|---|------------------|-------|--------------|-----------------|-------------------------|----------------------------|----------------|------------------------------|------------------------------|-------------------------------|-------------------------------|----------------------------------|------------------------|--------------------------------|------------------|----------------------------------|-------------------------|-----------------|----------------------|---------------|--------------------|
| Dattco, Inc.                                    | New Britain      | CT    | FR<br>DR     | 6<br>40         |                         |                            |                |                              |                              |                               |                               |                                  |                        |                                | X                |                                  |                         |                 |                      |               |                    |
| Greater Bridgeport Transit District             | Bridgeport       | CT    | FR<br>DR     | 52<br>22        |                         |                            |                |                              |                              | X                             |                               |                                  |                        |                                |                  |                                  |                         |                 |                      | X             |                    |
| Milford Transit District                        | Milford          | CT    | FR<br>DR     | 8<br>16         | DIG<br>DIG              |                            |                |                              |                              | [X]                           | P                             |                                  |                        |                                |                  |                                  |                         | X               |                      |               |                    |
| Northeast Transportation Company                | Waterbury        | CT    | FR<br>DR     | 41<br>6         |                         |                            |                |                              |                              |                               | P                             |                                  | MS                     |                                |                  |                                  |                         | X               |                      |               |                    |
| South East Area Transit District                | Norwich          | CT    | FR<br>DR     | 25<br>6         | TR,DIG<br>TR,DIG        | [GPS]                      |                |                              |                              | [X]                           |                               |                                  | MS                     | X                              |                  |                                  |                         |                 |                      | X             |                    |
| The New Britain Transportation Company          | Berlin           | CT    | FR<br>DR     | 15              |                         |                            |                |                              |                              |                               |                               |                                  | MS                     | X                              |                  |                                  |                         |                 |                      | X             |                    |
| Valley Transit District                         | Derby            | CT    | FR<br>DR     | 18              |                         | [GPS]                      |                |                              |                              | [X]                           |                               |                                  |                        |                                | X                |                                  |                         |                 |                      |               |                    |
| DART First State, Delaware Transit Core         | Dover            | DE    | FR<br>DR     | 210<br>145      | TR,DIG<br>TR,DIG        | [GPS]<br>[GPS]             |                |                              | [X]<br>[X]                   | [X]<br>X                      |                               |                                  |                        |                                |                  | [X]                              |                         | X               |                      | [X]<br>[X]    | [X]<br>[X]         |
| Bay County Council                              | Panama City      | FL    | FR<br>DR     | 5<br>40         |                         |                            |                |                              |                              |                               | P,W                           |                                  |                        |                                |                  |                                  |                         | X               |                      |               |                    |
| City of Tallahassee TALTRAN                     | Tallahassee      | FL    | FR<br>DR     | 56<br>17        | TR,DIG<br>TR,DIG        |                            |                |                              |                              |                               | P,W,I<br>P                    |                                  |                        |                                | X                |                                  |                         |                 | [X]                  |               |                    |
| Council on Aging of Martin County               | Stuart           | FL    | FR<br>DR     | 28              | DIG                     |                            |                |                              |                              | [X]                           | P                             |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Escambia County Area Transit                    | Pensacola        | FL    | FR<br>DR     | 32<br>8         |                         |                            |                |                              |                              |                               | P                             |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Gainesville Regional Transit System             | Gainesville      | FL    | FR<br>DR     | 68<br>20        | [DIG]                   | [GPS]                      |                | [X]                          |                              | [X]                           | P,W                           |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Indian River County Council on Aging            | Vero Beach       | FL    | FR<br>DR     | 8<br>23         | TR,DIG<br>TR,DIG        |                            |                |                              |                              | X                             | P,W                           | [X]                              |                        |                                |                  |                                  |                         | X               |                      |               |                    |
| Manatee County Transit                          | Bradenton        | FL    | FR<br>DR     | 16<br>19        | TR,DIG<br>TR,DIG        |                            |                |                              |                              | X                             |                               |                                  |                        |                                | X                |                                  |                         |                 |                      |               |                    |
| Miami Beach Transport Management Association    | Miami Beach      | FL    | FR<br>DR     | 11              |                         |                            |                |                              |                              | X                             | P                             |                                  |                        |                                |                  |                                  |                         | X               |                      |               |                    |
| Okaloosa County Coordinated Transportation Inc. | Ft. Walton Beach | FL    | FR<br>DR     | 44              |                         |                            |                |                              |                              | X                             | P,W                           |                                  | SC                     |                                |                  |                                  |                         |                 |                      |               |                    |

Table 3. APTS Deployment by Transit Agency Outside the United States' 78 Largest Metropolitan Areas

| Agency                                      | City           | State | Service Type | Vehicles (2000) | Advanced Communications    | Automatic Vehicle Location | Vehicle Probes | Automatic Passenger Counters | Vehicle Component Monitoring | Automated Operations Software | Automated Transit Information | Multi-Modal Traveler Information | Automated Fare Payment | Multi-Carrier Fare Integration | Mobility Manager | Transportation Management Center | Traffic Signal Priority | ITS Integration | Surveillance Cameras | Silent Alarms | Covert Microphones |
|---|----------------|-------|--------------|-----------------|----------------------------|----------------------------|----------------|------------------------------|------------------------------|-------------------------------|-------------------------------|----------------------------------|------------------------|--------------------------------|------------------|----------------------------------|-------------------------|-----------------|----------------------|---------------|--------------------|
| Ride Solution, Inc.                         | Palatka        | FL    | FR<br>DR     | 18<br>13        |                            | GPS                        |                | [X]                          | [X]                          | X                             |                               |                                  | MS<br>MS               |                                | X                |                                  |                         | X               |                      | [X]           |                    |
| Space Coast Area Transit                    | Cocoa          | FL    | FR<br>DR     | 40<br>114       | [DIG]                      | [GPS]                      |                |                              |                              | [X]                           | P, I<br>P                     |                                  |                        |                                |                  |                                  |                         | X               | [X]                  |               |                    |
| St. Lucie County Council on Aging           | Port St. Lucie | FL    | DR           | 43              | DIG                        | [OTR]                      |                |                              |                              | X                             |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Volusia Transportation Authority            | South Daytona  | FL    | FR<br>DR     | 65<br>41        | TR, [DIG]<br>TR, [DIG]     |                            |                |                              |                              | X                             | P<br>P                        |                                  |                        |                                |                  |                                  |                         | X               | X                    |               | X                  |
| Albany Transit System                       | Albany         | GA    | FR<br>DR     | 16<br>6         | DIG<br>DIG                 |                            |                |                              |                              |                               | P<br>P                        |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Athens Transit System                       | Athens         | GA    | FR<br>DR     | 21<br>4         | TR, DIG<br>TR, DIG         |                            |                |                              |                              |                               | P, W<br>P                     | X                                |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Augusta Public Transit                      | Augusta        | GA    | FR<br>DR     | 36<br>4         |                            |                            |                |                              |                              | X                             |                               |                                  | [SC]                   | X                              | X                |                                  |                         |                 |                      |               |                    |
| Chatham Area Transit Authority              | Savannah       | GA    | FR<br>DR     | 61<br>16        | TR                         |                            |                |                              |                              |                               | P, W, I<br>P                  |                                  |                        |                                |                  |                                  |                         | [X]             |                      |               |                    |
| City of Rome Transit Department             | Rome           | GA    | FR<br>DR     | 6<br>2          |                            |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 | X                    |               |                    |
| Cobb County Transit                         | Marietta       | GA    | FR<br>DR     | 53<br>15        | TR<br>TR                   | [OTR]                      |                |                              |                              | [X]                           |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Department of Transportation                | Columbus       | GA    | FR<br>DR     | 27<br>7         | TR, [DIG]<br>TR, [DIG]     |                            |                |                              |                              | X                             |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| University of Georgia Campus Transit System | Athens         | GA    | FR<br>DR     | 41<br>3         | TR<br>TR                   |                            |                | X                            |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Bettendorf Transit System                   | Bettendorf     | IA    | FR           | 7               |                            |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  | X                       | X               | X                    |               |                    |
| City of Davenport                           | Davenport      | IA    | FR           | 19              |                            | [U]                        |                |                              |                              | [X]                           |                               |                                  |                        |                                |                  |                                  |                         | [X]             |                      |               |                    |
| City of Dubuque-Keyline Transit             | Dubuque        | IA    | FR<br>DR     | 17<br>6         | [TR], [DIG]<br>[TR], [DIG] |                            |                | [X]                          |                              | [X]                           |                               |                                  | [SC]                   | X                              |                  |                                  |                         | [X]             |                      |               |                    |
| Coralville Transit                          | Coralville     | IA    | FR           | 9               | DIG                        |                            |                | [X]                          |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Des Moines Metropolitan Transit Authority   | Des Moines     | IA    | FR<br>DR     | 98<br>26        | TR<br>TR                   |                            |                |                              |                              | X                             | P                             |                                  | [MS], [SC]             |                                |                  | [X]                              | [X]                     | [X]             |                      |               |                    |



Table 3. APTS Deployment by Transit Agency Outside the United States' 78 Largest Metropolitan Areas

| Agency  | City        | State | Service Type |    | Vehicles (2000) | Advanced Communications |       | Automatic Vehicle Location | Vehicle Probes | Automatic Passenger Counters | Vehicle Component Monitoring | Automated Operations Software | Automated Transit Information | Multi-Modal Traveler Information | Automated Fare Payment | Multi-Carrier Fare Integration | Mobility Manager | Transportation Management Center | Traffic Signal Priority | ITS Integration | Surveillance Cameras | Silent Alarms | Covert Microphones |
|---|-------------|-------|--------------|----|-----------------|-------------------------|-------|----------------------------|----------------|------------------------------|------------------------------|-------------------------------|-------------------------------|----------------------------------|------------------------|--------------------------------|------------------|----------------------------------|-------------------------|-----------------|----------------------|---------------|--------------------|
| Iowa City Transit                                   | Iowa City   | IA    | FR           | DR | 21              | TR                      | GPS   |                            |                |                              |                              |                               | P, W                          |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Metropolitan Transit Authority of Black Hawk County | Waterloo    | IA    | FR           | DR | 17              | TR, DIG                 | [GPS] |                            |                |                              |                              | [X]                           |                               |                                  |                        |                                |                  |                                  |                         |                 |                      | X             |                    |
| Sioux City Transit System                           | Sioux City  | IA    | FR           | DR | 26              | TR, DIG                 | GPS   |                            |                |                              |                              | [X]                           | P, W                          | X                                |                        |                                |                  |                                  | [X]                     | [X]             |                      |               |                    |
| Siouxland Regional Transit System                   | Sioux City  | IA    | DR           | DR | 14              | TR, DIG                 |       |                            |                |                              |                              | X                             |                               |                                  |                        |                                | X                |                                  |                         | X               | [X]                  |               |                    |
| University of Iowa, CAMBUS                          | Iowa City   | IA    | FR           | DR | 22              | TR, [DIG]               |       |                            |                |                              |                              | [X]                           | P                             | X                                |                        |                                |                  |                                  | X                       |                 |                      |               |                    |
| Boise Urban Stages                                  | Boise       | ID    | FR           | DR | 38              | TR                      |       |                            |                |                              |                              |                               | P                             |                                  |                        |                                |                  |                                  |                         |                 |                      | X             |                    |
| Pocatello Regional Transit                          | Pocatello   | ID    | FR           | DR | 12              | TR, DIG                 |       |                            |                |                              |                              |                               | P                             |                                  |                        |                                |                  |                                  |                         |                 |                      | X             |                    |
| Bloomington Normal Public Transit System            | Bloomington | IL    | FR           | DR | 20              | DIG                     |       |                            |                |                              |                              | [X]                           |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Pekin Municipal Bus Service                         | Pekin       | IL    | FR           | DR | 2               | DIG                     |       |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| River Valley Metro Mass Transit District            | Kankakee    | IL    | FR           | DR | 10              | [TR], [DIG]             |       |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Rock Island County Mass Transit                     | Rock Island | IL    | FR           | DR | 57              | DIG                     | [GPS] | [A], [F]                   | [X]            | [X]                          |                              | [X]                           | [P], [W]                      | [X]                              |                        |                                | X                |                                  |                         | X               | [X]                  | [X]           | [X]                |
| Rockford Mass Transit District                      | Rockford    | IL    | FR           | DR | 37              |                         |       |                            |                |                              |                              |                               | P, W                          |                                  | [MS]                   |                                |                  |                                  |                         |                 |                      |               |                    |
| Springfield Mass Transit and District               | Springfield | IL    | FR           | DR | 24              |                         |       |                            |                |                              |                              | X                             |                               |                                  |                        |                                |                  |                                  |                         | X               |                      |               |                    |
| Urbana Champaign Mass Transit District              | Urbana      | IL    | FR           | DR | 46              |                         |       |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 | X                    |               |                    |
| ACE Cab   | Elkhart     | IN    | FR           | DR | 15              |                         | [GPS] |                            |                | [X]                          | [X]                          | [X]                           | P, W, I                       |                                  |                        |                                |                  |                                  |                         |                 | [X]                  | [X]           | [X]                |
| Bloomington Public Transportation Corporation       | Bloomington | IN    | FR           | DR | 74              |                         |       |                            |                | [X]                          | [X]                          | X                             | P                             |                                  |                        |                                |                  |                                  |                         |                 |                      | X             | X                  |
| City of Kokomo                                      | Kokomo      | IN    | FR           | DR | 49              | TR, DIG                 |       |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  | [X]                     |                 |                      |               |                    |
|   |             |       | FR           | DR | 34              | TR, DIG                 |       |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
|   |             |       | FR           | DR | 6               | TR, DIG                 |       |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
|   |             |       | FR           | DR | 12              |                         |       |                            |                |                              |                              |                               | [P]                           |                                  |                        |                                |                  |                                  |                         | [X]             |                      |               |                    |

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| Agency   | City           | State    | Service Type | Vehicles (2000) | Advanced Communications | Automatic Vehicle Location | Vehicle Probes | Automatic Passenger Counters | Vehicle Component Monitoring | Automated Operations Software | Automated Transit Information | Multi-Modal Traveler Information | Automated Fare Payment | Multi-Carrier Fare Integration | Mobility Manager | Transportation Management Center | Traffic Signal Priority | ITS Integration | Surveillance Cameras | Silent Alarms | Covert Microphones |
|--|----------------|----------|--------------|-----------------|-------------------------|----------------------------|----------------|------------------------------|------------------------------|-------------------------------|-------------------------------|----------------------------------|------------------------|--------------------------------|------------------|----------------------------------|-------------------------|-----------------|----------------------|---------------|--------------------|
| Fort Wayne Public Transportation Corporation       | Fort Wayne     | IN       | FR<br>DR     | 40<br>10        | [DIG]<br>[DIG]          | [GPS]                      |                |                              |                              | [X]<br>X                      | P<br>P                        |                                  | MS                     |                                |                  |                                  |                         | X               |                      |               |                    |
| Gary Public Transportation Corporation             | Gary           | IN       | FR<br>DR     | 39<br>5         | DIG<br>DIG              | [GPS]                      |                |                              | X                            | [X]<br>[X]                    | P,W,I<br>P                    | [X]                              |                        |                                |                  |                                  | [X]                     | X               |                      | X             |                    |
| Greater Lafayette Public Transportation            | Lafayette      | IN       | FR<br>DR     | 56<br>8         | TR,DIG<br>TR,DIG        | [GPS]                      |                |                              |                              | [X]<br>X                      | P,W,I<br>P                    |                                  |                        |                                |                  |                                  | X                       | X               |                      |               |                    |
| Heart City / Goshen Transit                        | South Bend     | IN       | FR<br>DR     | 4<br>31         |                         |                            |                |                              |                              | X<br>[X]                      | P<br>P,W,I                    |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Metropolitan Evansville Transit                    | Evansville     | IN       | FR<br>DR     | 24<br>14        | DIG<br>DIG              | [GPS]                      |                |                              | [X]                          | [X]                           | P                             |                                  |                        |                                |                  |                                  |                         |                 | X                    |               |                    |
| Muncie Indiana Transit System                      | Muncie         | IN       | FR<br>DR     | 30<br>17        |                         | [GPS]                      |                |                              |                              | [X]<br>X                      | P,W<br>P                      |                                  | MS                     |                                |                  |                                  |                         |                 |                      | [X]<br>X      |                    |
| South Bend Public Transportation                   | South Bend     | IN       | FR<br>DR     | 56<br>8         | [DIG]<br>[DIG]          |                            |                |                              |                              |                               | [P]<br>[P]                    |                                  | [MS],[SC]              |                                |                  |                                  |                         | [X]             | X                    |               |                    |
| Terre Haute Transit Utility                        | Terre Haute    | IN       | FR<br>DR     | 10<br>1         |                         |                            |                |                              |                              |                               |                               |                                  |                        |                                | X                |                                  |                         |                 |                      |               |                    |
| Tradewinds Rehabilitation Center<br>City of Olathe | Gary<br>Olathe | IN<br>KS | FR<br>DR     | 8<br>8          | DIG                     |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  | X                                |                         |                 |                      |               |                    |
| Topeka Transit                                     | Topeka         | KS       | FR<br>DR     | 29<br>15        |                         |                            |                |                              | X<br>X                       |                               |                               |                                  |                        |                                | X                |                                  |                         | X               |                      |               |                    |
| City of Ashland Bus System                         | Ashland        | KY       | FR<br>DR     | 4<br>1          |                         |                            |                |                              |                              |                               | P                             |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| HART-Henderson Area Rapid Transit                  | Henderson      | KY       | FR<br>DR     | 6<br>3          | DIG<br>DIG              |                            |                |                              |                              |                               |                               |                                  |                        |                                | X                |                                  |                         |                 |                      |               |                    |
| LEXTRAN  | Lexington      | KY       | FR<br>DR     | 48<br>14        | TR,DIG<br>TR,DIG        | [GPS]                      |                |                              |                              | [X]                           | P                             |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Owensboro Transit System                           | Owensboro      | KY       | FR<br>DR     | 8<br>3          |                         |                            |                |                              |                              |                               | P                             |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Transit Authority of Northern Kentucky             | Fort Wright    | KY       | FR<br>DR     | 117<br>12       | [TR]                    |                            |                |                              |                              |                               | P<br>P                        | [X]                              | MS                     | X                              |                  |                                  |                         | [X]             | [X]                  | [X]           | [X]                |



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|---|--------------|-------|--------------|-----------------|----------------------------|----------------------------|----------------|------------------------------|------------------------------|-------------------------------|-------------------------------|----------------------------------|--------------------------|--------------------------------|------------------|----------------------------------|-------------------------|-----------------|----------------------|---------------|--------------------|
| City of Lafayette Transit                   | Lafayette    | LA    | FR<br>DR     | 16<br>5         |                            | [GPS]                      |                |                              |                              | [X]                           | -                             |                                  | MS                       |                                |                  |                                  |                         |                 | [X]<br>[X]           |               | [X]<br>[X]         |
| City of Monroe Transit Service              | Monroe       | LA    | FR<br>DR     | 18<br>2         | TR, [DIG]<br>TR, [DIG]     |                            |                |                              |                              |                               |                               |                                  |                          |                                |                  |                                  |                         |                 |                      |               |                    |
| Lake Charles Transit System                 | Lake Charles | LA    | FR<br>DR     | 4<br>2          | TR<br>TR                   |                            |                |                              |                              |                               |                               |                                  |                          |                                |                  |                                  |                         |                 | X                    |               |                    |
| Shreveport Area Transit System              | Shreveport   | LA    | FR<br>DR     | 46<br>13        |                            |                            |                |                              |                              |                               |                               |                                  |                          |                                |                  |                                  |                         |                 |                      |               |                    |
| Terrebonne Parish Good Earth Transit System | Houma        | LA    | DR           | 2               | TR, [DIG]                  |                            |                |                              |                              |                               |                               |                                  |                          |                                |                  |                                  |                         | X               | X                    |               |                    |
| Berkshire Regional Transit Authority        | Pittsfield   | MA    | FR<br>DR     | 16<br>10        | [DIG]<br>[DIG]             |                            |                |                              |                              |                               |                               |                                  |                          |                                |                  |                                  |                         |                 |                      |               |                    |
| Brockton Area Transit Authority             | Brockton     | MA    | FR<br>DR     | 44<br>40        | [TR], [DIG]<br>[TR], [DIG] | [GPS]                      |                |                              |                              | [X]<br>X                      |                               |                                  | MS                       |                                | X                |                                  |                         |                 |                      | X             |                    |
| Cape Ann Transportation Authority           | Gloucester   | MA    | FR<br>DR     | 20<br>13        |                            |                            |                |                              |                              |                               |                               |                                  |                          |                                | X                |                                  |                         |                 |                      |               |                    |
| Cape Cod Regional Transit Authority         | Dennis       | MA    | FR<br>DR     | 18<br>65        |                            | GPS                        | A, F           |                              | X<br>X                       | X<br>X                        | P<br>P                        |                                  | [MS], [SC]<br>[MS], [SC] | [X]<br>[X]                     |                  |                                  | [X]                     | X               |                      |               |                    |
| Cape Island Express Lines Inc.              | New Bedford  | MA    | FB           | 1               | DIG                        | GPS                        |                |                              |                              | X                             | P                             |                                  |                          |                                |                  |                                  |                         |                 |                      |               |                    |
| Lowell Regional Transit Authority           | Lowell       | MA    | FR<br>DR     | 37<br>30        | DIG<br>DIG                 |                            |                |                              |                              |                               | P, W<br>P                     |                                  |                          |                                |                  |                                  |                         |                 |                      |               |                    |
| Montachusett Regional Transit Authority     | Fitchburg    | MA    | FR<br>DR     | 22<br>77        | [DIG]                      |                            |                |                              |                              |                               |                               |                                  |                          |                                |                  |                                  |                         |                 |                      |               |                    |
| Pioneer Valley Transit Authority            | Springfield  | MA    | FR<br>DR     | 40<br>81        | TR, [DIG]<br>TR, [DIG]     | [GPS]                      |                |                              | X                            | [X]<br>[X]                    | P<br>P                        |                                  |                          |                                | X                |                                  |                         | X               | X                    |               |                    |
| Southeast Regional Transit Authority        | New Bedford  | MA    | FR<br>DR     | 65<br>25        | DIG<br>DIG                 |                            |                |                              |                              | X<br>X                        |                               |                                  |                          |                                |                  |                                  |                         |                 | X                    |               |                    |
| Transit Express                             | Springfield  | MA    | FR           | 145             | TR, [DIG]                  | [GPS]                      |                |                              | X                            | [X]                           | P                             |                                  | SC                       |                                |                  |                                  |                         | X               | X                    |               |                    |
| Worcester Regional Transit Authority        | Worcester    | MA    | FR<br>DR     | 54<br>41        | DIG<br>DIG                 |                            |                |                              |                              |                               |                               |                                  |                          |                                |                  |                                  |                         |                 |                      | X             |                    |
| Allegany County Transit                     | Cumberland   | MD    | FR<br>DR     | 9<br>10         |                            |                            |                |                              |                              | [X]                           |                               |                                  |                          |                                |                  |                                  |                         |                 |                      |               |                    |

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|--|------------------|-------|----------------|-----------------|-------------------------|----------------------------|----------------|------------------------------|------------------------------|-------------------------------|-------------------------------|----------------------------------|------------------------|--------------------------------|------------------|----------------------------------|-------------------------|-----------------|----------------------|---------------|--------------------|
| Annapolis Department of Transportation       | Annapolis        | MD    | FR 15<br>DR 3  | DIG             |                         |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Washington County Transportation Commission  | Hagerstown       | MD    | FR 13<br>DR 3  | DIG             |                         |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Biddeford-Saco-OOB Transit                   | Biddeford        | ME    | FR 11          | [DIG]           |                         |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         | [X]             |                      |               |                    |
| Casco Bay Island Transit District            | Portland         | ME    | FB 5           |                 |                         |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Chebeague Transportation Co.                 | Chebeague Island | ME    | FR 3<br>FB 2   |                 |                         | LC                         |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| City of Bangor/ Ther Bus                     | Bangor           | ME    | FR 10          |                 |                         |                            |                |                              |                              |                               |                               | [X]                              |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| CYR Bus Line                                 | Old Town         | ME    | FR 19<br>DR 47 | DIG             |                         |                            |                |                              |                              |                               | P                             |                                  |                        | X                              |                  |                                  |                         |                 |                      | X             |                    |
| Downeast Transportation, Inc.                | Ellsworth        | ME    | FR 27          | [DIG]           |                         |                            |                | [X]                          |                              | [X]                           | [P],[I]                       |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Isle Au Haut Stonington                      | Stonington       | ME    | FB 2           |                 |                         |                            |                |                              |                              |                               | P                             |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Kennebec Valley Community Action Program     | Waterville       | ME    | FR 4<br>DR 22  | DIG             |                         |                            |                |                              |                              | X                             |                               |                                  |                        | X                              |                  |                                  |                         |                 |                      |               |                    |
| The Regional Transportation Program          | Portland         | ME    | DR 29          |                 |                         |                            |                |                              |                              | X                             |                               |                                  |                        | X                              |                  |                                  |                         |                 |                      |               |                    |
| Waldo Co. Comm. for Social Action            | Belfast          | ME    | FR 1<br>DR 12  | DIG             |                         |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Western Maine Transportation Services        | Auburn           | ME    | FR 8<br>DR 28  | DIG             |                         |                            |                |                              |                              | X                             |                               |                                  |                        | X                              |                  |                                  |                         |                 |                      |               |                    |
| York County Community Action Corp.           | Sanford          | ME    | FR 1<br>DR 18  |                 |                         |                            |                |                              |                              | X                             |                               |                                  |                        | X                              |                  |                                  |                         |                 |                      |               |                    |
| Battle Creek Transit                         | Battle Creek     | MI    | FR 20<br>DR 10 |                 |                         | [GPS]                      |                |                              | [X]                          | [X]                           |                               |                                  |                        |                                |                  |                                  |                         |                 |                      | [X]           |                    |
| Bay Metro Transportation Authority           | Bay City         | MI    | FR 46<br>DR 10 | TR,DIG          |                         |                            |                |                              |                              | X                             |                               |                                  |                        |                                |                  |                                  |                         |                 | X                    |               |                    |
| Capital Area Transportation Authority        | Lansing          | MI    | FR 77<br>DR 75 | TR              |                         | GPS                        | A,F            |                              |                              | X                             | [P],[W],[I]                   |                                  |                        |                                |                  |                                  | [X]                     | X               |                      |               |                    |
| City of Detroit Department of Transportation | Detroit          | MI    | FR 540         | DIG             |                         | [GPS]                      |                | [X]                          | [X]                          | [X]                           | P,W                           |                                  |                        | X                              |                  |                                  |                         |                 |                      |               |                    |
| City of Holland Dial-a-Ride                  | Holland          | MI    | DR 10          |                 |                         |                            |                |                              |                              | X                             |                               |                                  |                        |                                | X                |                                  |                         | X               |                      |               |                    |



Table 3. APTS Deployment by Transit Agency Outside the United States' 78 Largest Metropolitan Areas

| Agency                                    | City           | State | Service Type | Vehicles (2000) | Advanced Communications | Automatic Vehicle Location | Vehicle Probes | Automatic Passenger Counters | Vehicle Component Monitoring | Automated Operations Software | Automated Transit Information | Multi-Modal Traveler Information | Automated Fare Payment   | Multi-Carrier Fare Integration | Mobility Manager | Transportation Management Center | Traffic Signal Priority | ITS Integration | Surveillance Cameras | Silent Alarms | Covert Microphones |
|---|----------------|-------|--------------|-----------------|-------------------------|----------------------------|----------------|------------------------------|------------------------------|-------------------------------|-------------------------------|----------------------------------|--------------------------|--------------------------------|------------------|----------------------------------|-------------------------|-----------------|----------------------|---------------|--------------------|
| City of Jackson Transportation Authority  | Jackson        | MI    | FR<br>DR     | 11<br>40        |                         | [GPS]<br>[GPS]             |                |                              |                              | [X]<br>[X]                    | [P], [W]<br>[P]               | [X]<br>[X]                       | [MS], [SC]<br>[MS], [SC] | [X]<br>[X]                     |                  |                                  |                         |                 | X                    |               |                    |
| Kalamazoo Metro Transit System            | Kalamazoo      | MI    | FR<br>DR     | 42<br>5         |                         |                            |                |                              |                              |                               |                               |                                  |                          |                                |                  |                                  |                         |                 | X                    |               |                    |
| Mass Transportation Authority             | Flint          | MI    | FR<br>DR     | 221<br>95       | TR<br>TR                |                            |                |                              |                              | X<br>X                        |                               |                                  |                          |                                | X                |                                  |                         | [X]             | X                    |               |                    |
| Muskegon Area Transit System              | North Muskegon | MI    | FR<br>DR     | 11<br>3         | DIG<br>DIG              |                            |                | X                            |                              | X                             |                               |                                  |                          |                                |                  |                                  |                         |                 |                      |               |                    |
| Niles Dial-A-Ride                         | Niles          | MI    | DR           | 8               |                         |                            |                |                              |                              |                               |                               |                                  |                          |                                | X                |                                  |                         | X               |                      |               |                    |
| Saginaw Transit System Authority          | Saginaw        | MI    | FR<br>DR     | 15<br>15        | TR<br>TR                |                            |                |                              |                              |                               |                               |                                  |                          |                                |                  |                                  |                         |                 | X                    |               |                    |
| Twin Cities Area Transportation Authority | Benton Harbor  | MI    | FR<br>DR     | 2<br>17         | [DIG]<br>[DIG]          | [GPS]<br>[GPS]             |                |                              |                              | [X]<br>[X]                    |                               |                                  |                          |                                |                  |                                  |                         |                 | [X]<br>[X]           | [X]<br>[X]    | [X]<br>[X]         |
| City of Rochester                         | Rochester      | MN    | FR<br>DR     | 33<br>4         |                         |                            |                |                              |                              |                               | [P]<br>[P]                    | [X]<br>[X]                       |                          |                                | X                |                                  | X                       |                 | X                    |               |                    |
| Duluth Transit Authority                  | Duluth         | MN    | FR           | 97              | [TR], [DIG]             | [SO]                       |                |                              | [X]                          | [X]                           | [P], [W]                      |                                  |                          |                                |                  |                                  |                         |                 | X                    |               |                    |
| Mankato Heartland Express                 | Mankato        | MN    | FR<br>DR     | 12<br>3         | TR<br>TR                |                            |                |                              |                              | [X]<br>[X]                    | P, W<br>P                     |                                  | MS<br>MS                 | X                              |                  |                                  | [X]<br>[X]              | [X]<br>[X]      |                      | X<br>X        |                    |
| St. Cloud Metropolitan Transit Commission | St. Cloud      | MN    | FR<br>DR     | 28<br>17        | DIG<br>DIG              | GPS                        |                |                              |                              | X<br>X                        |                               |                                  |                          |                                |                  |                                  |                         |                 |                      |               |                    |
| City Utilities of Springfield             | Springfield    | MO    | FR<br>DR     | 23<br>5         | [TR]<br>[TR]            |                            |                |                              | X<br>X                       |                               |                               |                                  | [SC]                     |                                |                  |                                  |                         |                 |                      |               |                    |
| Columbia Transit System                   | Columbia       | MO    | FR<br>DR     | 19<br>9         |                         |                            |                |                              |                              | X                             |                               |                                  |                          |                                |                  |                                  |                         |                 |                      |               |                    |
| Jefferson City Transit                    | Jefferson City | MO    | FR<br>DR     | 6<br>18         |                         |                            |                |                              |                              | X                             |                               |                                  |                          |                                |                  |                                  |                         |                 |                      |               |                    |
| Southwest Missouri State University       | Springfield    | MO    | FR           | 12              |                         |                            |                |                              |                              | X                             |                               |                                  |                          |                                |                  |                                  |                         |                 | X                    |               |                    |
| St. Joseph Transit                        | St. Joseph     | MO    | FR<br>DR     | 3<br>21         | TR, DIG<br>TR, DIG      | [GPS]<br>[GPS]             |                |                              | [X]<br>[X]                   | [X]<br>X                      | [P], [W]                      |                                  |                          |                                | X                |                                  | X                       | X               |                      |               |                    |
| Jackson Public Transportation Company     | Jackson        | MS    | FR<br>DR     | 36<br>27        | DIG<br>DIG              |                            |                |                              |                              | X                             |                               |                                  |                          |                                |                  |                                  |                         |                 |                      |               |                    |

Table 3. APTS Deployment by Transit Agency Outside the United States' 78 Largest Metropolitan Areas

| Agency  | City         | State | Service Type | Vehicles (2000) | Advanced Communications | Automatic Vehicle Location | Vehicle Probes | Automatic Passenger Counters | Vehicle Component Monitoring | Automated Operations Software | Automated Transit Information | Multi-Modal Traveler Information | Automated Fare Payment | Multi-Carrier Fare Integration | Mobility Manager | Transportation Management Center | Traffic Signal Priority | ITS Integration | Surveillance Cameras | Silent Alarms | Covert Microphones |
|---|--------------|-------|--------------|-----------------|-------------------------|----------------------------|----------------|------------------------------|------------------------------|-------------------------------|-------------------------------|----------------------------------|------------------------|--------------------------------|------------------|----------------------------------|-------------------------|-----------------|----------------------|---------------|--------------------|
| Mississippi Coast Transportation Authority          | Gulfport     | MS    | FR<br>DR     | 23<br>21        |                         |                            |                |                              |                              | [X]                           |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Billings Metropolitan Transit                       | Billings     | MT    | FR<br>DR     | 23<br>15        | TR<br>TR                |                            |                |                              |                              | X                             | P<br>P                        |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Great Falls Transit District                        | Great Falls  | MT    | FR           | 17              |                         |                            |                |                              |                              |                               | [P]                           |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| MountainLine Missoula Urban Transportation District | Missoula     | MT    | FR<br>DR     | 22<br>4         | DIG<br>DIG              |                            |                |                              |                              |                               | P                             |                                  |                        |                                |                  |                                  |                         |                 |                      | X             |                    |
| Asheville Transit Authority                         | Asheville    | NC    | FR           | 16              | DIG                     |                            |                |                              |                              |                               | I                             |                                  |                        |                                |                  |                                  |                         | X               |                      |               |                    |
| Fayetteville Area System of Transit                 | Fayetteville | NC    | FR<br>DR     | 22<br>19        | TR,DIG<br>TR,DIG        | [GPS]                      |                |                              |                              | [X]<br>[X]                    |                               |                                  | [MS]                   |                                |                  |                                  |                         | X               |                      |               |                    |
| Greenville Area Transit                             | Greenville   | NC    | FR<br>DR     | 7<br>2          |                         |                            |                |                              |                              |                               | P,I                           |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Piedmont Wagon                                      | Hickory      | NC    | FR<br>DR     | 5<br>2          | DIG<br>DIG              |                            |                |                              |                              |                               |                               |                                  |                        |                                | X                |                                  | X                       | [X]             |                      |               |                    |
| Rocky Mount Transit                                 | Rocky Mount  | NC    | FR<br>DR     | 6<br>30         | TR,DIG<br>TR,DIG        |                            |                |                              | X                            |                               | P<br>P                        |                                  |                        |                                | X                |                                  |                         |                 |                      | X<br>X        |                    |
| Wilmington Transit Authority                        | Wilmington   | NC    | FR<br>DR     | 16<br>4         |                         |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 | X                    |               |                    |
| Bis-man Transit Board                               | Bismarck     | ND    | DR           | 26              |                         |                            |                |                              |                              | X                             | [P]                           | [X]                              |                        |                                | X                |                                  |                         | X               |                      |               |                    |
| Grand Forks City Bus                                | Grand Forks  | ND    | FR<br>DR     | 15<br>15        | DIG<br>DIG              | [DK]                       |                |                              |                              | [X]<br>[X]                    | P,W                           | [X]                              |                        |                                |                  |                                  | X                       |                 |                      |               |                    |
| StarTran  | Lincoln      | NE    | FR<br>DR     | 80<br>8         |                         |                            |                | X                            |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Community Transportation Service                    | Claremont    | NH    | FR<br>DR     | 6<br>3          |                         |                            |                |                              |                              |                               |                               |                                  |                        |                                | X                |                                  |                         |                 |                      |               |                    |
| Concord Area Transit                                | Concord      | NH    | FR<br>DR     | 4<br>4          | [DIG]<br>[DIG]          |                            |                |                              |                              | [X]<br>[X]                    |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Greater Laconia Transit Agency                      | Gilford      | NH    | DR           | 10              |                         |                            |                |                              |                              |                               | P                             |                                  |                        |                                | X                |                                  |                         |                 |                      |               |                    |
| HCS Community Care Incorporated                     | Keene        | NH    | FR<br>DR     | 3<br>2          |                         |                            |                |                              |                              | [X]                           | P                             |                                  |                        |                                | X                |                                  |                         |                 |                      |               |                    |



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|---|---------------|-------|------------------|-----------------|-------------------------|----------------------------|----------------|------------------------------|------------------------------|-------------------------------|-------------------------------|----------------------------------|------------------------|--------------------------------|------------------|----------------------------------|-------------------------|-----------------|----------------------|---------------|--------------------|
| Manchester Transit Authority                        | Manchester    | NH    | FR 14<br>DR 3    |                 |                         |                            |                |                              |                              |                               | [P]                           |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Nashua Transit System                               | Nashua        | NH    | FR 7<br>DR 10    |                 | TR,DIG<br>TR,DIG        | [GPS]                      |                |                              | [X]                          | [X]                           | P,W                           | X                                |                        |                                |                  |                                  |                         | X               |                      |               |                    |
| Coach USA Hudson Transit Lines, Inc.                | Mahwah        | NJ    | FR 140           |                 |                         |                            |                |                              |                              |                               | P                             |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Community Transit, Inc.                             | Newark        | NJ    | FR 54            |                 |                         |                            |                |                              | X                            |                               |                               |                                  |                        |                                |                  |                                  |                         | X               |                      |               |                    |
| Cumberland County Office on Aging                   | Bridgeton     | NJ    | DR 28            |                 |                         |                            |                |                              |                              | X                             |                               |                                  |                        |                                |                  |                                  | [X]                     |                 |                      |               |                    |
| DeCamp Bus Lines                                    | Newark        | NJ    | FR 78            |                 |                         |                            |                |                              |                              | [X]                           |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Lafayette-Greenville IBOA                           | Newark        | NJ    | FR 29            |                 |                         | [GPS]                      |                |                              |                              |                               | P,W                           |                                  |                        |                                |                  |                                  |                         |                 | X                    | [X]           |                    |
| Lakeland Bus Lines, Inc.                            | Newark        | NJ    | FR 9             |                 |                         |                            |                |                              | X                            |                               |                               |                                  |                        |                                |                  |                                  |                         |                 | X                    |               |                    |
| Leisure Line  | Newark        | NJ    | FR 54            |                 |                         |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         | X               |                      |               |                    |
| Olympia Trails Bus Co., Inc.,                       | Newark        | NJ    | FR 54            |                 |                         |                            |                |                              | X                            |                               |                               |                                  |                        |                                |                  |                                  |                         |                 | X                    |               |                    |
| Orange-Newark-Elizabeth, Inc.,                      | Newark        | NJ    | FR 54            |                 |                         |                            |                |                              | X                            |                               |                               |                                  |                        |                                |                  |                                  |                         |                 | X                    |               |                    |
| PATH  | Jersey City   | NJ    | HR 345           |                 | TR,DIG                  |                            |                | X                            |                              |                               | P,W                           | [X]                              | MS                     | X                              |                  | X                                |                         | X               |                      |               |                    |
| South Orange Avenue IBOA                            | Newark        | NJ    | FR 54            |                 |                         |                            |                |                              | X                            |                               |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Trans-Bridge Lines, Inc.                            | Newark        | NJ    | FR 38            |                 |                         |                            |                |                              |                              |                               | P,W                           |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Trans-Hudson Express                                | Newark        | NJ    | FR 54            |                 |                         |                            |                |                              | X                            |                               |                               |                                  |                        |                                |                  |                                  |                         |                 | X                    |               |                    |
| City of Santa Fe                                    | Santa Fe      | NM    | FR 31<br>DR 6    |                 | TR<br>TR                |                            |                |                              |                              | [X]                           | P                             |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Road Runner   | Las Cruces    | NM    | FR 16<br>DR 16   |                 | TR<br>TR                |                            |                |                              |                              | [X]                           | P                             |                                  |                        |                                |                  |                                  | [X]                     |                 |                      |               |                    |
| ATC/VanCom  | No. Las Vegas | NV    | FR 294<br>DR 124 |                 |                         |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Regional Transportation Commission of Washoe County | Reno          | NV    | FR 65<br>DR 39   |                 |                         | [GPS]                      |                | [X]                          |                              | [X]                           | [I]                           |                                  | MS                     |                                |                  |                                  |                         |                 |                      | X             | X                  |
| Atlantic Paratrans, Inc.                            | Staten Island | NY    | DR 350           |                 |                         |                            |                |                              |                              | X                             |                               |                                  |                        |                                |                  |                                  |                         |                 |                      | [X]           | [X]                |
| Broome County Department of Public Transportation   | Vestal        | NY    | FR 43<br>DR 18   |                 |                         |                            |                |                              |                              |                               | P                             |                                  | MS                     |                                |                  |                                  |                         |                 |                      |               |                    |
| Chemung County Transit System                       | Elmira        | NY    | FR 25<br>DR 9    |                 |                         |                            |                |                              |                              |                               |                               |                                  |                        |                                | X                |                                  |                         |                 |                      |               |                    |

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|--|--------------|-------|--------------|-----------------|-------------------------|----------------------------|----------------|------------------------------|------------------------------|-------------------------------|-------------------------------|----------------------------------|------------------------|--------------------------------|------------------|----------------------------------|-------------------------|-----------------|----------------------|---------------|--------------------|
| City of Rome, VIP Transportation               | Rome         | NY    | FR<br>DR     | 5<br>2          | DIG<br>DIG              |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               | X                  |
| Dutchess County Division of Mass Transport     | Poughkeepsie | NY    | FR<br>DR     | 32<br>20        | DIG<br>DIG              |                            |                |                              |                              | X                             |                               |                                  |                        |                                |                  |                                  |                         |                 | [X]                  |               |                    |
| Newburgh Beacon Bus Corp                       | Newburgh     | NY    | FR           | 2               | DIG                     |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               | X                  |
| New York Bus Tours, Inc.                       | Bronx        | NY    | FR           | 136             |                         |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Orange County ADA Paratransit Svc.             | Goshen       | NY    | DR           | 3               |                         |                            |                |                              |                              |                               |                               |                                  |                        |                                | X                |                                  |                         |                 |                      |               |                    |
| Progressive Transportation                     | Nichols      | NY    | FR           | 8               |                         |                            |                |                              |                              |                               |                               |                                  |                        |                                | X                |                                  |                         |                 |                      |               |                    |
| Tompkins Consolidated Area Transit             | Ithaca       | NY    | FR<br>DR     | 60<br>16        |                         | [GPS]<br>[GPS]             |                |                              |                              | [X]<br>[X]                    | [P]<br>[P]                    | [X]                              | [MS]                   |                                |                  |                                  |                         | [X]             | X                    |               |                    |
| Utica Transit Authority                        | Utica        | NY    | FR<br>DR     | 38<br>7         |                         |                            |                |                              |                              | X                             |                               |                                  |                        | [X]                            |                  |                                  |                         |                 |                      |               |                    |
| Chillicothe Transit System                     | Chillicothe  | OH    | FR<br>DR     | 8<br>3          |                         |                            |                |                              |                              |                               | P<br>P                        |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| City of Newark Transit Operations              | Newark       | OH    | FR<br>DR     | 3<br>3          |                         |                            |                |                              |                              |                               |                               |                                  |                        |                                | X                |                                  |                         |                 |                      |               |                    |
| Middletown Transit System                      | Middletown   | OH    | FR<br>DR     | 6<br>1          |                         |                            |                |                              |                              |                               | P                             |                                  |                        |                                | X                |                                  |                         |                 |                      | X             |                    |
| Portage Area Regional Transportation Authority | Kent         | OH    | FR<br>DR     | 5<br>19         | DIG<br>DIG              |                            |                |                              |                              |                               |                               |                                  |                        |                                | X                |                                  |                         |                 |                      |               |                    |
| Richland County Transit                        | Mansfield    | OH    | FR<br>DR     | 9<br>4          | DIG                     |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Stark Area Regional Transit Authority          | Canton       | OH    | FR<br>DR     | 56<br>25        |                         |                            |                |                              |                              |                               |                               |                                  |                        |                                | X                |                                  |                         |                 |                      |               |                    |
| Lane Transit District                          | Eugene       | OR    | FR<br>DR     | 112<br>24       | [DIG]                   | [GPS]                      |                | [X]                          | [X]                          | [X]                           | [P]<br>[P]                    | [X]                              |                        |                                |                  |                                  | [X]                     | [X]             | [X]                  | X             |                    |
| Rogue Valley Transit District                  | Medford      | OR    | FR<br>DR     | 12<br>34        |                         |                            |                | [X]                          |                              |                               |                               |                                  |                        |                                | [X]              |                                  | [X]                     | [X]             |                      | X             |                    |
| Salem Area Mass Transit District               | Salem        | OR    | FR           | 69              |                         |                            |                |                              |                              | [X]                           | P, W, I                       | X                                |                        |                                | [X]              |                                  | X                       |                 |                      |               |                    |



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| Area Transportation Authority of North Central Pennsylvania | Johnsburg     | PA    | FR<br>DR     | 23<br>58        | TR, DIG<br>TR, DIG      | [U]<br>[U]                 |                |                              | [X]<br>[X]                   | [X]<br>[X]                    |                               |                                  |                        |                                |                  |                                  |                         | X               |                      |               |                    |
| Centre Area Transportation Authority                        | State College | PA    | FR<br>DR     | 55<br>8         |                         |                            |                |                              |                              |                               | P                             |                                  | [MS]                   |                                |                  |                                  | [X]                     |                 |                      |               |                    |
| Mid Mon Valley Transit Authority                            | Charlertoi    | PA    | FR<br>DR     | 23<br>2         | [DIG]                   |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         | X               |                      |               |                    |
| Red Rose Transit Authority                                  | Lancaster     | PA    | FR<br>DR     | 46<br>4         |                         |                            |                |                              |                              |                               |                               |                                  |                        | X                              |                  |                                  |                         | X               |                      |               |                    |
| Shenango Valley Shuttle Service                             | Hermitage     | PA    | FR<br>DR     | 24              |                         |                            |                |                              |                              | X                             |                               |                                  |                        | X                              |                  |                                  |                         |                 |                      |               |                    |
| York County Transportation Authority                        | York          | PA    | FR<br>DR     | 32<br>32        | [DIG]<br>[DIG]          | [GPS]                      |                |                              | [X]<br>[X]                   | [X]<br>[X]                    |                               |                                  | [MS]                   |                                |                  |                                  |                         |                 |                      |               |                    |
| City of San Juan  | San Juan      | PR    | FR           | 18              | [DIG]                   |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  | X                                |                         | X               |                      |               |                    |
| Metropolitan Bus Authority                                  | San Juan      | PR    | FR<br>DR     | 188<br>23       | [DIG]<br>[DIG]          | [GPS]                      |                | [X]<br>[X]                   | [X]<br>[X]                   | [X]<br>[X]                    |                               |                                  |                        |                                |                  | X<br>X                           | [X]<br>[X]              | [X]<br>[X]      | [X]<br>[X]           | [X]<br>[X]    |                    |
| Aiken County Transit System                                 | Aiken         | SC    | FR<br>DR     | 4<br>15         |                         |                            |                |                              |                              | X                             |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Pee Dee Regional Transportation Authority                   | Florence      | SC    | FR<br>DR     | 20<br>190       | [TR, DIG]<br>[TR, DIG]  | [GPS]                      |                |                              |                              | [X]                           |                               |                                  |                        |                                |                  |                                  |                         | [X]             |                      |               |                    |
| Santee Wateree Regional Transportation Authority            | Sumter        | SC    | FR<br>DR     | 20<br>75        |                         | [GPS]                      |                |                              |                              | [X]                           |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Rapid Transit System  | Rapid City    | SD    | FR<br>DR     | 7<br>11         | TR, DIG<br>TR, DIG      |                            |                |                              |                              | X                             | [P]                           | [X]                              |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Sioux Falls Transit   | Sioux Falls   | SD    | FR<br>DR     | 25<br>20        |                         |                            |                |                              |                              | X<br>X                        | [P]<br>[P]                    | [X]<br>[X]                       |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Bristol Tennessee Transit System                            | Bristol       | TN    | FR<br>DR     | 4<br>4          | [DIG]<br>[DIG]          |                            |                |                              |                              |                               | P<br>P                        |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Chattanooga Area Regional Transportation Authority          | Chattanooga   | TN    | FR<br>DR     | 74<br>14        |                         |                            |                |                              |                              |                               |                               |                                  |                        |                                | X                |                                  |                         |                 |                      |               |                    |
| City of Kingsport   | Kingsport     | TN    | FR<br>DR     | 3<br>4          | DIG                     |                            |                |                              |                              | [X]<br>[X]                    | P<br>P                        |                                  |                        |                                | X                |                                  |                         |                 | X                    |               |                    |

Table 3. APTS Deployment by Transit Agency Outside the United States' 78 Largest Metropolitan Areas

| Agency   | City           | State | Service Type   | Vehicles (2000) | Advanced Communications    | Automatic Vehicle Location | Vehicle Probes | Automatic Passenger Counters | Vehicle Component Monitoring | Automated Operations Software | Automated Transit Information | Multi-Modal Traveler Information | Automated Fare Payment | Multi-Carrier Fare Integration | Mobility Manager | Transportation Management Center | Traffic Signal Priority | ITS Integration | Surveillance Cameras | Silent Alarms | Covert Microphones |
|--|----------------|-------|----------------|-----------------|----------------------------|----------------------------|----------------|------------------------------|------------------------------|-------------------------------|-------------------------------|----------------------------------|------------------------|--------------------------------|------------------|----------------------------------|-------------------------|-----------------|----------------------|---------------|--------------------|
| Clarksville Transit System                       | Clarksville    | TN    | FR<br>DR       | 11<br>10        | [TR]<br>[TR]               |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 | X                    |               |                    |
| Jackson Transit Authority                        | Jackson        | TN    | FR<br>DR       | 17<br>5         |                            |                            |                |                              |                              |                               | [P]<br>[P]                    |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Johnson City Transit System                      | Johnson City   | TN    | FR<br>DR       | 14<br>6         | DIG<br>DIG                 |                            |                |                              |                              | [X]                           | P                             |                                  | MS                     |                                | X                | X                                |                         |                 |                      |               |                    |
| Amarillo Transit System                          | Amarillo       | TX    | FR<br>DR       | 17<br>5         |                            |                            |                |                              |                              |                               | P                             |                                  |                        |                                | X                |                                  |                         |                 |                      |               |                    |
| Arlington Handitran                              | Arlington      | TX    | DR             | 17              |                            |                            |                |                              |                              |                               | P                             |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Beaumont Municipal Transit System                | Beaumont       | TX    | FR<br>DR       | 16<br>5         |                            |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 | X                    |               |                    |
| Brazos Transit District                          | Bryan          | TX    | FR<br>DR       | 8<br>4          | DIG<br>DIG                 | [GPS]<br>[GPS]             |                |                              |                              | X<br>X                        | [P]<br>[P]                    |                                  |                        |                                |                  |                                  |                         |                 |                      | X             |                    |
| Citi Bus   | Lubbock        | TX    | FR<br>DR       | 30<br>21        | DIG<br>DIG                 | [GPS]                      |                |                              |                              | [X]                           |                               |                                  | MS                     |                                | X                |                                  |                         |                 |                      | X             |                    |
| CityLink   | Abilene        | TX    | FR<br>DR       | 18<br>11        | DIG<br>DIG                 |                            |                |                              |                              | [X]                           |                               |                                  |                        |                                | X                |                                  |                         |                 |                      | X             |                    |
| City of Brownsville Urban System                 | Brownsville    | TX    | FR<br>DR       | 17<br>12        | TR<br>TR                   |                            |                |                              |                              | [X]<br>[X]                    |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| City of Longview                                 | Kilgore        | TX    | DR             | 5               | TR                         | [GPS]                      |                |                              |                              | [X]                           |                               |                                  |                        |                                |                  |                                  |                         | X               |                      |               |                    |
| City of San Angelo                               | San Angelo     | TX    | FR<br>DR       | 7<br>7          | TR<br>TR                   |                            |                |                              |                              |                               | P,W<br>P                      | X                                |                        |                                | X                |                                  |                         |                 |                      |               |                    |
| City of Temple                                   | Temple         | TX    | DR             | 8               | TR,DIG                     |                            |                |                              |                              | X                             | P                             |                                  |                        |                                |                  |                                  |                         |                 | [X]                  |               |                    |
| Corpus Christi Regional Transportation Authority | Corpus Christi | TX    | FR<br>DR       | 78<br>39        | TR,[DIG]<br>TR,[DIG]       | [GPS]                      |                | X                            |                              | X<br>X                        | [P],[W]<br>[P]                |                                  |                        |                                |                  |                                  | X                       |                 |                      |               | [X]                |
| First Transit                                    | Houston        | TX    | FR             | 240             |                            |                            |                | X                            |                              |                               |                               |                                  | MS                     | X                              |                  |                                  |                         |                 |                      |               |                    |
| Island Transit                                   | Galveston      | TX    | FR<br>DR<br>LR | 17<br>14<br>4   | TR,DIG<br>TR,DIG<br>TR,DIG |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |

Table 3. APTS Deployment by Transit Agency Outside the United States' 78 Largest Metropolitan Areas

| Agency                                     | City            | State | Service Type | Vehicles (2000) | Advanced Communications | Automatic Vehicle Location | Vehicle Probes | Automatic Passenger Counters | Vehicle Component Monitoring | Automated Operations Software | Automated Transit Information | Multi-Modal Traveler Information | Automated Fare Payment | Multi-Carrier Fare Integration | Mobility Manager | Transportation Management Center | Traffic Signal Priority | ITS Integration | Surveillance Cameras | Silent Alarms | Covert Microphones |
|--|-----------------|-------|--------------|-----------------|-------------------------|----------------------------|----------------|------------------------------|------------------------------|-------------------------------|-------------------------------|----------------------------------|------------------------|--------------------------------|------------------|----------------------------------|-------------------------|-----------------|----------------------|---------------|--------------------|
| Laredo Municipal Transit System            | Laredo          | TX    | FR           | 44              |                         | [GPS]                      |                |                              |                              | [X]                           | P                             |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| McKinney Avenue Transit Authority          | Dallas          | TX    | DR           | 20              |                         | [GPS]                      |                |                              |                              | [X]                           | P                             |                                  |                        |                                |                  |                                  | X                       |                 |                      | X             |                    |
| Port Arthur Transit                        | Port Arthur     | TX    | FR           | 4               |                         |                            |                |                              |                              |                               | P                             |                                  |                        |                                |                  |                                  |                         |                 |                      | [X]           |                    |
| Port Arthur Transit                        | Port Arthur     | TX    | FR           | 10              |                         |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Port Arthur Transit                        | Port Arthur     | TX    | DR           | 6               |                         |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Texoma Council of Governments              | Sherman         | TX    | DR           | 13              |                         |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| The Gulf Coast Center                      | Galveston       | TX    | DR           | 45              | TR                      | [GPS]                      |                |                              |                              | X                             | [P]                           |                                  |                        |                                |                  |                                  |                         |                 |                      | X             |                    |
| Waco Transit System                        | Waco            | TX    | FR           | 14              | TR,DIG                  | [GPS]                      |                |                              |                              | [X]                           | P                             |                                  |                        |                                |                  |                                  |                         |                 |                      | X             |                    |
| Waco Transit System                        | Waco            | TX    | DR           | 8               | TR,DIG                  | [GPS]                      |                |                              |                              | [X]                           | P                             |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Logan Transit District                     | Logan           | UT    | FR           | 15              |                         |                            |                |                              |                              |                               | P                             |                                  |                        |                                |                  |                                  |                         |                 | X                    |               |                    |
| Logan Transit District                     | Logan           | UT    | DR           | 5               |                         |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Blacksburg Transit                         | Blacksburg      | VA    | FR           | 31              | DIG                     | [GPS]                      |                |                              |                              | [X]                           | [P],[W],[I]                   |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Blacksburg Transit                         | Blacksburg      | VA    | DR           | 11              |                         |                            |                |                              |                              | X                             |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Bristol Virginia Transit                   | Bristol         | VA    | FR           | 5               |                         |                            |                |                              |                              |                               | P                             |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Bristol Virginia Transit                   | Bristol         | VA    | DR           | 1               |                         |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Charlottesville Transit Service            | Charlottesville | VA    | FR           | 22              | [TR]                    | [GPS]                      |                |                              |                              | [X]                           | P                             |                                  |                        |                                |                  |                                  | X                       |                 |                      |               |                    |
| City of Alexandria                         | Alexandria      | VA    | FR           | 42              |                         |                            |                |                              |                              |                               | P,I                           |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| City of Alexandria                         | Alexandria      | VA    | DR           | 15              |                         |                            |                |                              |                              |                               | P                             |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| City of Danville Mass Transit System       | Danville        | VA    | FR           | 7               | TR                      |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| City of Danville Mass Transit System       | Danville        | VA    | DR           | 1               | TR                      |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| City of Fairfax CUEBus                     | Fairfax         | VA    | FR           | 12              | [TR]                    | GPS                        |                |                              |                              | X                             | P,I                           |                                  | [SC]                   |                                |                  |                                  |                         |                 |                      | X             |                    |
| Greater Lynchburg Transit Company          | Lynchburg       | VA    | FR           | 25              |                         |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Greater Lynchburg Transit Company          | Lynchburg       | VA    | DR           | 4               |                         |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Greater Roanoke Transit Company            | Roanoke         | VA    | FR           | 38              | TR                      |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 |                      | X             |                    |
| JAUNT                                      | Charlottesville | VA    | FR           | 3               |                         | [GPS]                      |                |                              |                              | [X]                           | [P]                           |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| JAUNT                                      | Charlottesville | VA    | DR           | 62              |                         |                            |                |                              |                              | X                             | [P]                           |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Loudoun County Commuter Bus Service        | Leesburg        | VA    | FR           | 11              | DIG                     |                            |                |                              |                              |                               | P                             |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Virginia Railway Express                   | Alexandria      | VA    | CR           | 57              |                         | GPS                        |                |                              |                              | X                             | P,W,I                         |                                  |                        | X                              |                  |                                  |                         |                 |                      |               |                    |
| Addison County Transit Resources, Inc.     | Middlebury      | VT    | FR           | 5               | [DIG]                   |                            |                |                              |                              | X                             | P                             | X                                |                        |                                |                  |                                  |                         | [X]             |                      |               |                    |
| Advance Transit                            | Wilder          | VT    | FR           | 18              |                         |                            |                |                              |                              |                               | P                             |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Chittenden County Transportation Authority | Burlington      | VT    | FR           | 38              |                         |                            |                |                              |                              |                               | [P]                           | [X]                              | [MS]                   | X                              |                  | X                                |                         | [X]             |                      |               |                    |



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| Agency                                   | City           | State | Service Type    | Vehicles (2000) | Advanced Communications | Automatic Vehicle Location | Vehicle Probes | Automatic Passenger Counters | Vehicle Component Monitoring | Automated Operations Software | Automated Transit Information | Multi-Modal Traveler Information | Automated Fare Payment | Multi-Carrier Fare Integration | Mobility Manager | Transportation Management Center | Traffic Signal Priority | ITS Integration | Surveillance Cameras | Silent Alarms | Covert Microphones |
|--|----------------|-------|-----------------|-----------------|-------------------------|----------------------------|----------------|------------------------------|------------------------------|-------------------------------|-------------------------------|----------------------------------|------------------------|--------------------------------|------------------|----------------------------------|-------------------------|-----------------|----------------------|---------------|--------------------|
| Green Mountain Express                   | Bennington     | VT    | FR 3<br>DR 11   |                 |                         |                            |                |                              |                              |                               |                               |                                  |                        |                                | X                |                                  |                         |                 |                      |               |                    |
| Lake Champlain Transport Co.             | Burlington     | VT    | FB 9            |                 | [DIG]                   |                            |                |                              |                              |                               | P                             | [X]                              |                        |                                |                  |                                  |                         | X               |                      |               |                    |
| Rural Comm. Transport                    | St. Johnsbury  | VT    | FR 5<br>DR 17   |                 |                         |                            |                |                              |                              |                               |                               |                                  |                        |                                | X                |                                  |                         |                 |                      |               |                    |
| Shorewell Ferries, Inc.                  | Shoreham       | VT    | FB 1            |                 |                         |                            |                |                              |                              |                               | P                             |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| The Brattleboro Bee Line                 | Brattleboro    | VT    | FR 1<br>DR 1    |                 | DIG<br>DIG              |                            |                |                              |                              |                               | P<br>P                        | [X]                              |                        |                                |                  |                                  |                         | X               |                      |               |                    |
| Town and Village Transportation Services | Westminster    | VT    | FR 9<br>DR 6    |                 | DIG<br>DIG              |                            |                |                              |                              |                               | P<br>P                        | [X]                              |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Ben Franklin Transit                     | Richland       | WA    | FR 61<br>DR 56  |                 |                         |                            |                |                              |                              | X                             | P, W<br>P                     |                                  |                        |                                | X                |                                  | X                       |                 |                      | X             |                    |
| Community Urban Bus Service              | Longview       | WA    | FR 4<br>DR 6    |                 | TR<br>TR                |                            |                |                              |                              |                               |                               |                                  |                        | X                              |                  |                                  |                         |                 |                      |               |                    |
| Intercity Transit                        | Olympia        | WA    | FR 42<br>DR 25  |                 | TR, [DIG]<br>TR, [DIG]  |                            |                |                              |                              |                               | P, W, I                       | X                                | [SC]                   | X                              |                  |                                  |                         | [X]             |                      |               |                    |
| Pullman Transit                          | Pullman        | WA    | FR 4<br>DR 4    |                 | [TR]<br>[TR]            |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Spokane Transit Agency                   | Spokane        | WA    | FR 129<br>DR 88 |                 |                         |                            |                |                              | [X]<br>[X]                   | X<br>X                        | P<br>P                        |                                  | MS                     |                                |                  |                                  |                         |                 | X<br>X               |               |                    |
| Valley Transit                           | Walla Walla    | WA    | FR 18<br>DR 6   |                 |                         | GPS                        |                |                              |                              | [X]                           |                               |                                  |                        |                                | X                |                                  |                         | X               |                      |               |                    |
| Yakima Transit                           | Yakima         | WA    | FR 21<br>DR 17  |                 | [DIG]<br>[DIG]          |                            |                |                              |                              |                               | P, W                          |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Chippewa Falls Shared Ride Taxi System   | Chippewa Falls | WI    | DR 7            |                 | TR, [DIG]               |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| City of Beloit Transit System            | Beloit         | WI    | FR 10<br>FR 4   |                 |                         |                            |                |                              |                              |                               | P                             |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Community Transportation Systems         | La Crosse      | WI    | FR 6<br>DR 43   |                 | TR<br>TR, DIG           |                            |                |                              |                              | X                             |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Green Bay Metro                          | Green Bay      | WI    | FR 27           |                 |                         |                            |                |                              |                              | X                             |                               |                                  |                        |                                |                  |                                  |                         |                 | X                    |               |                    |



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|---|--------------|-------|--------------|-----------------|-------------------------|----------------------------|----------------|------------------------------|------------------------------|-------------------------------|-------------------------------|----------------------------------|------------------------|--------------------------------|------------------|----------------------------------|-------------------------|-----------------|----------------------|---------------|--------------------|
| Janesville Transit System                 | Janesville   | WI    | FR<br>DR     | 23<br>1         |                         |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 | X                    |               |                    |
| LaCrosse Municipal Transit Utility        | LaCrosse     | WI    | FR           | 22              | TR                      |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 | X                    |               |                    |
| Madison Metro Transit                     | Madison      | WI    | FR           | 200             | [TR],[DIG]              | GPS                        |                | X                            | X                            | X                             | [P],[W],[I]                   |                                  |                        |                                |                  |                                  |                         |                 |                      | X             |                    |
| Onalaska Shared Ride Taxi                 | Onalaska     | WI    | DR           | 20              | [TR],[DIG]              |                            |                |                              |                              | X                             | [P]                           |                                  |                        |                                |                  |                                  |                         |                 |                      | X             |                    |
| Oshkosh Transit System                    | Oshkosh      | WI    | DR           | 3               |                         |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
|   |              |       | FR           | 17              | [DIG]                   |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
|   |              |       | DR           | 27              |                         |                            |                |                              |                              | X                             |                               |                                  |                        |                                |                  |                                  |                         |                 | X                    |               |                    |
| Sheboygan Transit System                  | Sheboygan    | WI    | FR           | 29              | [TR]                    | [GPS]                      |                |                              |                              | X                             |                               |                                  |                        |                                |                  |                                  |                         |                 |                      | X             |                    |
|   |              |       | DR           | 4               |                         |                            |                |                              |                              | X                             |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Valley Transit                            | Appleton     | WI    | FR           | 30              |                         |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
|   |              |       | DR           | 14              |                         |                            |                |                              |                              | X                             |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Wausau Area Transit System                | Wausau       | WI    | FR           | 24              |                         |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 | X                    |               |                    |
|   |              |       | DR           | 11              |                         |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Kanawha Valley Regional Transit Authority | Charleston   | WV    | FR           | 55              | TR,DIG                  | [GPS]                      |                |                              |                              | X                             | P                             |                                  |                        |                                | X                |                                  |                         |                 |                      |               | X                  |
|   |              |       | DR           | 13              | TR,DIG                  |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Mid-Ohio Valley Transit Authority         | Parkersburg  | WV    | FR           | 12              |                         |                            |                |                              |                              |                               |                               |                                  | MS                     |                                |                  |                                  |                         |                 |                      |               |                    |
|   |              |       | DR           | 2               |                         |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 | X                    |               |                    |
| Ohio Valley Regional Transit Authority    | Wheeling     | WV    | FR           | 22              | [DIG]                   |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
|   |              |       | DR           | 4               |                         |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Tri-State Transit                         | Huntington   | WV    | FR           | 31              | DIG                     |                            |                |                              |                              | X                             | P                             |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
|   |              |       | DR           | 10              |                         |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| Weirton Transit Core                      | Steubenville | WV    | FR           | 2               |                         |                            |                |                              |                              |                               | [P]                           |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
|   |              |       | DR           | 1               |                         |                            |                |                              |                              |                               | [P]                           |                                  |                        |                                | X                |                                  |                         |                 |                      |               |                    |
| Cheyenne Transit                          | Cheyenne     | WY    | FR           | 10              |                         |                            |                |                              |                              |                               |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
|   |              |       | DR           | 12              |                         |                            |                |                              |                              | X                             |                               |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |
| City of Casper                            | Casper       | WY    | DR           | 9               | TR                      |                            |                |                              |                              | X                             | P                             |                                  |                        |                                |                  |                                  |                         |                 |                      |               |                    |



## APPENDIX A - DEFINITIONS OF TERMS USED

**Advanced Communications** - digital radio (sound converted into binary information and transmitted across airwaves) and/or trunked radio (a computer selection of an available frequency, as opposed to manual selection or use of pre-set frequency).

**Automated Fare Payment** - payment schemes by which riders pay for individual trips by non-paper media (e.g., magnetic stripe card or smart card) purchased in advance or pay for their trips by credit or debit cards.

**Automated Operations Software** - software that displays automatic vehicle location-equipped vehicle positions, vehicle data, operator data, and communications information on dispatcher monitors; automated control software for light, heavy, or commuter rail systems; automated scheduling software for demand response service. (This category does not include basic run-cutting and scheduling packages for fixed route services which, off-line, develop set schedules for buses and drivers.)

**Automated Transit Information** - systems that either provide route, schedule, stop, transfer, fare, trip planning, and/or real-time schedule adherence or arrival information to the public directly, without human intervention.

**Automatic Passenger Counter** - an automated means of counting boarding and alighting passengers (e.g., treadle mats or infrared beams placed by the door).

**Automatic Vehicle Location** - position determination via an automatic technology or combination of technologies, such as Global Positioning System (triangulation of satellite signals), Signposts (beacons at known locations transmit signals picked up by vehicle), Ground-Based Radio (triangulation of radio tower signals), or Dead-Reckoning (vehicle's odometer and compass used to measure new position from previous known position), and typically includes real-time reporting of that location to a dispatcher.

**Covert Microphone** - a hidden microphone on the vehicle that can be opened by the dispatcher to listen to what is happening on the vehicle during emergency situations.

**ITS Integration** - the sharing of information on traffic and incidents, the sharing of infrastructure (buildings, computer systems, communications), or coordinated operations with another agency (TMCs, joint development of common control strategy).



**Mobility Manager** - coordination of travel requests and vehicle dispatching for multiple agencies (e.g., social service agencies, HHS, transit agencies, etc.) Riders or agencies are billed by the Mobility Manager.

**Multi-Modal Traveler Information** - information made available to the public from a single source covering multiple modes (i.e., transit and traffic or different transit modes operated by several transit providers).

**Multi-Carrier Fare Integration** - any fare structure or payment mechanism which covers more than one provider. This includes cards, tokens, transfers, or other payment media (other than cash) that is accepted by at least two providers (including toll agencies).

**Silent Alarm** - an emergency signal activated by the vehicle operator pushing a concealed button that alerts the dispatch center that an emergency situation exists on-board the vehicle.

**Surveillance Camera** - video camera located inside the vehicle to record actions taking place on the vehicle.

**Traffic Signal Priority** - a means of giving transit vehicles priority at traffic signals by advancing the green signal phase or extending the green phase in order to minimize the delay. The priority may be actuated manually (e.g., by the driver pressing a switch on the vehicle) or automatically (e.g., linked to an AVL system).

**Transportation Management Center** - a facility housing the operations management centers for at least two transportation modes. This might include highway congestion mitigation (e.g., assist in incident management) and transit dispatching.

**Vehicle Component Monitoring** - continuous automatic remote measurement of vehicle component status (i.e., engine oil pressure, engine temperature, electrical system, tire pressure, etc.).

**Vehicle Probe** - AVL equipped transit bus data provided to highway agencies for calculation of roadway travel times, travel speeds, and flow conditions.

## APPENDIX B - 1995-2000 DEPLOYMENT DATA

### Advanced Communications

| Survey Year | 1995 | 1998 | 2000 |
|-------------|------|------|------|
| Operational | 58   | 140  | 229  |
| Planned     | 22   | 81   | 94   |
| Total       | 80   | 221  | 323  |

### Automatic Vehicle Location

| Survey Year | 1995 | 1998 | 2000 |
|-------------|------|------|------|
| Operational | 22   | 61   | 88   |
| Planned     | 64   | 100  | 142  |
| Total       | 86   | 161  | 230  |

### Automatic Passenger Counters

| Survey Year | 1995 | 1998 | 2000 |
|-------------|------|------|------|
| Operational | 11   | 24   | 33   |
| Planned     | 21   | 30   | 74   |
| Total       | 32   | 54   | 107  |

### Vehicle Component Monitoring

| Survey Year | 1995 | 1998 | 2000 |
|-------------|------|------|------|
| Operational | 5    | 13   | 46   |
| Planned     | 24   | 31   | 68   |
| Total       | 29   | 44   | 114  |

### Automated Operations Software

| Survey Year | 1995 | 1998 | 2000 |
|-------------|------|------|------|
| Operational | 92   | 124  | 177  |
| Planned     | 68   | 72   | 132  |
| Total       | 160  | 196  | 309  |

### Automated Transit Information

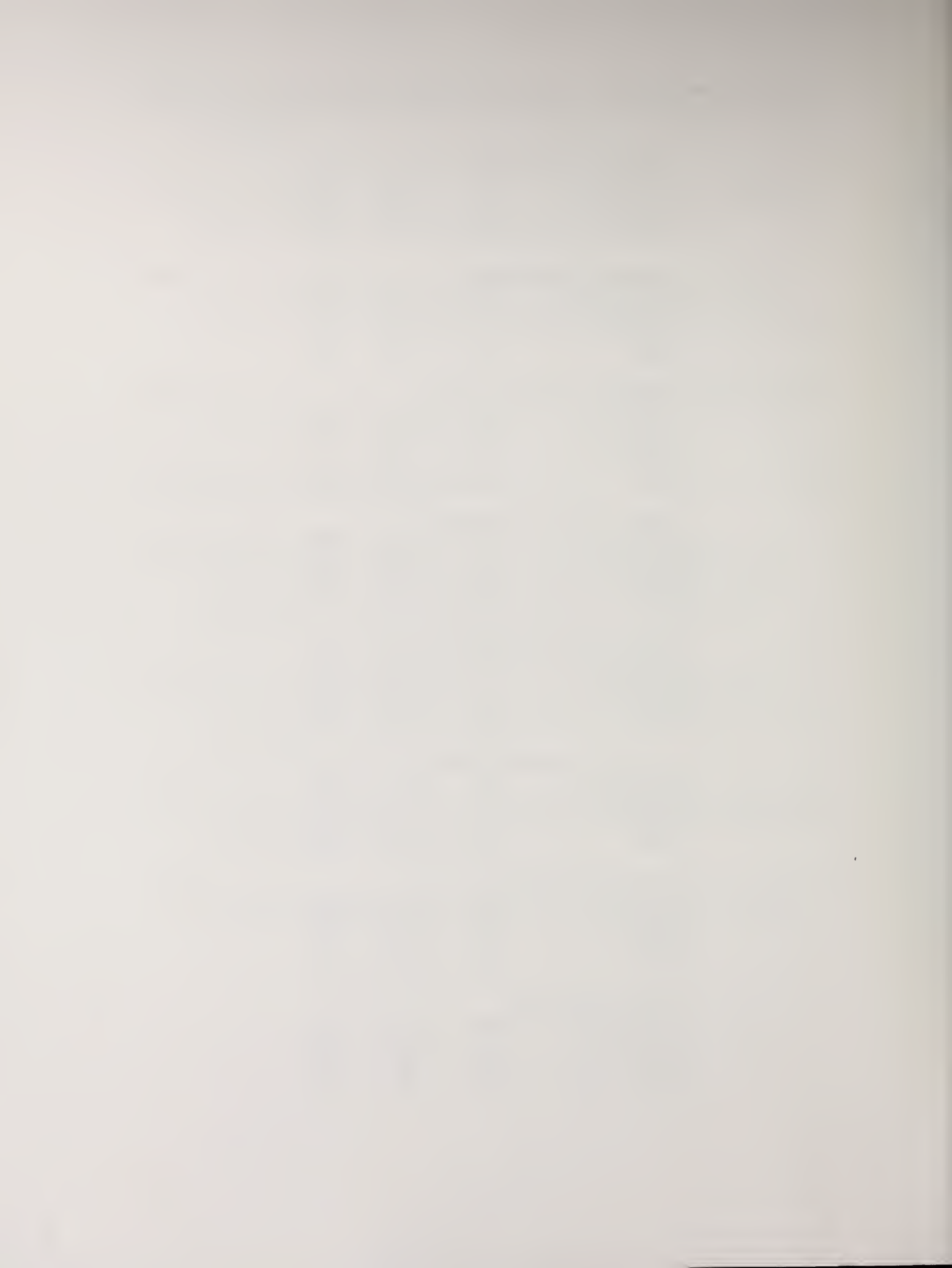
| Survey Year | 1995 | 1998 | 2000 |
|-------------|------|------|------|
| Operational | 48   | 89   | 291  |
| Planned     | 45   | 75   | 48   |
| Total       | 93   | 164  | 339  |

### Automated Fare Payment

| Survey Year | 1995 | 1998 | 2000 |
|-------------|------|------|------|
| Operational | 22   | 42   | 98   |
| Planned     | 43   | 68   | 77   |
| Total       | 65   | 110  | 175  |

### Traffic Signal Priority

| Survey Year | 1995 | 1998 | 2000 |
|-------------|------|------|------|
| Operational | 9    | 16   | 30   |
| Planned     | 18   | 40   | 58   |
| Total       | 27   | 56   | 88   |







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